Supplementary Information for

Social Networks and Cooperation in Hunter-Gatherers

Coren L. Apicella[1,2], Frank W. Marlowe[3], James H. Fowler[4,5], Nicholas A. Christakis[1,2,6,7]

[1] *Institute for Quantitative Social Science, Harvard University, Cambridge, MA 02138, USA*
[2] *Department of Health Care Policy, Harvard Medical School, Boston, MA 02115, USA*
[3] *Department of Anthropology, Cambridge University, Cambridge, CB2 3DZ, UK*
[4] *Medical Genetics Department, University of California, San Diego, CA 92103, USA*
[5] *Political Science Department, University of California, San Diego, CA 92103, USA*
[6] *Department of Sociology, Harvard University, Cambridge, MA 02138, USA*
[7] *Department of Medicine, Harvard Medical School, Boston, MA 02115, USA*

This file contains Supplementary Methods, Supplementary Statistics and Results, Supplementary Tables S1-S51, and Supplementary Figures S1-S13 with Legends, and Supplementary References.

Participants

The Hadza are nomadic and therefore their camps are not fixed in space, though camps tend to move within a set geographic range. One of the researchers (CLA) visited 17 different camps around the Lake Eyasi region, covering approximately 3,825 sq km (see Figure S1 for map). The researcher would ask Hadza individuals in the current camp to direct her to the location of the next closest camp. One such camp was not found and one additional camp could not be accessed with use of a vehicle. Other unknown Hadza camps possibly exist and were not sampled.

All 18-65 year old adults in each camp (100%) were interviewed and participated in a public goods game, anthropometric evaluations, and social network ascertainment, as well as other data collection procedures. All interviews were conducted in Swahili and in private. Subjects were informed that all their responses would be kept confidential.

We used straws filled with all-natural honey (Honeystix, GloryBee foods Inc.) to elicit ties for the *gift network* and also, separately, for playing the public goods game. The Hadza rank honey as their very most preferred food[1].

The project was approved by Harvard University Committee on the Use of Human Subjects and the Tanzanian Commission on Science and Technology. Verbal informed consent was provided by all participants.

Photographic Census

To facilitate data collection, before going into the field, we prepared a photographic census of all adult Hadza based on archival facial photographs taken by one of the researchers (FWM) during his yearly visits over the last 10 years. We used this pictorial database to elicit ties in the *campmate* network. The main reason for the use of the photographic database was to eliminate any errors in data collection. The Hadza can have similar names and sometime cannot remember the "Swahili names" of their friends and loved ones. While the Hadza generally use the first name of their father as their last name, the Hadza often change their first names. Thus, without pictures to identify unique individuals, there exist multiple sources for potential error.

Large posters (22in x 28in) containing rows of individual faces of approximately 1.5in x 2in size were created for each sex (see Figure S2). The pictures for each sex filled roughly 3-4 poster boards. Each individual picture was assigned a unique identification number. A separate list containing all identification numbers, and the previously associated names with that number, was also generated. This allowed the researcher to confirm that the individual selected was indeed the person the subject intended to name. Furthermore, individuals were told that they could choose a person despite not seeing or finding them on the posters. This allowed the researcher to look for the named individual on the name list and find their associated identification number. The researcher could then look for the individual on the posters and confirm their identity.

The total number of individuals in the female pictures was 271. However, after accounting for the deceased (and duplicates), a total of 254 adult women could be named from the posters. The number of male pictures included in the poster was 279 of which 263 were unique, living adult men.

Individuals were told that they could also name individuals that were *not* present in the posters. Forty-two such individuals were named, and of those, 27 had been previously encountered by FWM during previous visits and therefore had already been assigned a unique identification number. The remaining individuals were assigned unique identification numbers by CLA. Of those who completed the social network battery, 36 did not themselves have a picture in the photographic database. However, about 80% of them were named as alters by another person in the study. We also control for whether or not individuals had a picture in our statistical models, as relevant (and we find no material effect).

To avoid the possibility of presentation order effects, we generated three sets of posters for each sex in which the individual photographs were randomly ordered. The order/placement of the four posters within each set was also varied between subjects.

Anthropometry

Body weight, body fat, muscle mass, height, and handgrip strength were measured in the field. The amount of body fat as a proportion of total body weight, and the total kilograms of muscle in the body (both smooth and skeletal), were measured using bio-electrical impedance analysis (Tanita Body Composition Monitor, BC-533). Height was measured with a stadiometer, when available, and otherwise measured using a tape measure. The maximum isometric strength of the left and right hand and forearm muscles in kilograms was measured using a dynamometer. The dynamometer was not available during the entire duration of the study and therefore we only have this measure for 83 of our participants

Public Goods Game

All 18-65 year olds within each camp played a single round of a public goods game using sticks of honey. Thus, each camp constituted a single group with whom subjects would play. The game was played with each subject, in private, inside the researcher's vehicle. Subjects were told that their choices would be kept confidential. Most Hadza are familiar with this set-up having participated in confidential interviews and experiments, including other economic games, inside a vehicle in past years. This, however, was their first experience playing a public goods game. Supplementary Figure S3 shows a picture of a Hadza woman playing the public goods game.

A cardboard box with a small opening at the top was placed inside the vehicle where donations to the public good could be inserted. Having a physical box present facilitated in both helping the Hadza visualize the game during its explanation and by making their choices

more concrete during the game itself. Eventually, the cardboard box, after being used in multiple camps, became unusable and was replaced by a stiff plastic bag with a top zipper.

Subjects were endowed with 4 sticks of honey. They were instructed that they could keep any amount from 0-4 sticks of the honey or donate them to the public good by inserting them into the cardboard box. Subjects were told that for every stick of honey they donated, the researcher (CLA), would donate an additional 3 sticks of honey to the cardboard box, and that, after all adult campmates played the game, the honey inside the box would be divided equally among them. They were also told that they would receive the honey that they did not donate at the same time as the public honey was distributed. We did this so as to not confound generosity with the ability to be patient.

Before subjects made their decision, the researcher simulated all their possible choices so that subjects were shown the additional amount of honey added to the box for each additional stick donated by the subject. For example, subjects were shown the physical amount of 9 sticks of honey that would be added to the box if they were to donate 3 of their endowed sticks, and 12 sticks of honey that would be added to the box if they were to donate all 4 sticks of their honey. Subjects were also told that all of the adults in their camp would also need to make this decision, and that if all campmates donated all their sticks of honey, the box would fill up, but that if no one donated their honey the box would remain empty. In fact, the public goods game was described in detail to all subjects by explaining the possible outcomes of their actions in respect to others' actions. For instance, they were told that if they donated all their honey while no one else donated their honey, then they would receive basically no honey. Likewise, they were also told that if they did not donate their honey while everyone else did, they would get more honey than their other campmates.

The public goods game was usually played during the last day the researcher was in camp. This likely limited strategic discussion between subjects. Regardless, any discussion that may have transpired between subjects on how they played or would play could be either deceptive or truthful.

Meat and Baobab Valuation Task

A market game was played with adult Hadza where they were asked to determine the worth of a number of market items in terms of cups of rice. The items in the market included 2.5 ounces of dried beef bought from a local butcher in Arusha and a medium-sized baobab fruit taken from trees in one of the camps. The items were placed in front of the Hadza along with ten individual cups of rice. The Hadza were asked to indicate the amount of rice in cups they would trade for each item. The task was incentivized so that, at the end of the game, a number from 1 through 10 corresponding to cups of rice and an item from the market game was randomly chosen. The Hadza then received either the randomly drawn number of cups of rice or the item depending on which they indicated was worth more. So, for instance, if the number "4" was chosen along with baobab fruit and the subject said the baobab fruit was worth 6 cups of rice they would receive the baobab as payment. This ensures that the participants had incentives to report their true preferences. Since we also determined the price of water in terms of rice, values for the market items were converted in terms of liters of water.

Parental Investment

To measure *parental investment*, we identified the total number of sticks of honey that parents chose to give to their children; this is an absolute count, and the number can vary from 0 to 3.

Inter-camp Connectedness

Figure S4 shows the number of social ties in the *campmate* network from individuals in the row camps to individuals in the column camps. This documents the high prevalence of inter-camp ties, the familiarity the Hadza have with members of their society outside their current camp, and the overall structure of the camp network itself.

Lack of Variation in Structure with Distance from Modernity

Contemporary hunter-gatherers provide the only direct observation of human social behaviour in the absence of more modern forms of subsistence; thus, they can offer a glimpse of the social worlds of our early human ancestors. The Hadza in particular lie near the median value of many traits for warm-climate foragers, who are the most relevant for making inferences about human evolution. And there is little evidence that Hadza social structure and organization has changed with increased exposure to modernity[2].

Moreover, we find that proximity to the potentially modernizing effect of a local village is not associated with variation in the structure of Hadza networks in camps spread out over thousands of square kilometres. Specifically, intra-camp network structure, as characterized by the degree distribution and by a measure of transitivity, whether ascertained by the *campmate* or *gift network*, did not vary by distance from Mangola, a nearby settled village where the Hadza are visited by western tourists and on occasion interact in markets (Figure S5). That is, the Hadza formed similar network structures within each camp, regardless of their camp's proximity to "modernity."

Data and Basic Regression Methods

Table S1 shows summary statistics.

Tables S2-S15 show logit regressions across all possible dyads in the network, where the dependent variable for the *campmate* networks is 1 if person *i* names person *j* as someone with whom they want to camp, and 0 otherwise; and the dependent variable for the *gift* networks is 1 if person *i* gives person *j* a gift, and 0 otherwise. We account for multiple observations of the ego by clustering standard errors using a general estimating equations (GEE) approach[3]. Our basic model is:

$$g\left(E\left[Y\right]\right) = \alpha + \beta_1 x^{ego} + \beta_2 x^{alter} + \beta_3 \left(-\left|x^{ego} - x^{alter}\right|\right) \qquad (1)$$

where Y is 1 if ego named alter and 0 otherwise. The link function is a logit specification, $g(a)=\log(a / (1 - a))$. We also estimate the covariance structure of correlated observations for each ego. The covariance matrix of Y is modeled by $V = \phi A^{1/2} R A^{1/2}$ for each ego, where ϕ is a scaling constant, A is a diagonal matrix of scaling functions, and R is the working correlation matrix. We assume an independence working correlation structure for the clustered errors, which has been shown to yield asymptotically unbiased and consistent, although possibly inefficient, parameter estimates (the β and γ terms) even when the correlation structure is misspecified[4].

The independent variables in the basic model (shown in Tables S2-S12) include a measure for person *i* (the "ego"), a measure for person *j* (the "alter"), and a measure of the similarity of *i* and *j* that is equal to the negative absolute value of the difference. The coefficient on the ego value indicates how much a one-unit change in the independent variable is associated with an increase in the log odds that an ego names a person in the *campmates* or *gift* networks.

To convert this to a measure comparable across variables for Figure S7a below, we calculate the effect of a one standard deviation increase in the measure on the predicted probability of a social tie (expressed as percent change in the baseline predicted probability when all variables are held at their means). The resulting values yield an estimate of the association of ego characteristics with expected out-degree.

Similarly, the coefficient on the alter value indicates how much the independent variable is associated with the log odds that an ego names a person in the *campmates* or *gift* networks. To convert this to a measure comparable across variables for Figure S7b below, we calculate the effect of a one standard deviation increase in the measure on the predicted probability of a social tie (expressed as percent change in the baseline predicted probability when all variables are held at their means). The resulting values yield an estimate of the association of alter characteristics with expected in-degree.

Finally, the coefficient on ego-alter similarity indicates how much homophily on the independent variable is associated with an increase in the likelihood of a social tie. Higher values indicate that people with social ties are more similar to one another than people without social ties. To convert this to a measure comparable across variables for Figure 1b in the main text, we calculate the effect of a one standard deviation increase in the measure on the predicted probability of a social tie (expressed as percent change in the baseline predicted probability when all variables are held at their means). The resulting values yield an estimate of the association of ego-alter similarity and expected degree.

The coefficients from the model for Public Good Donations in Table S16 are shown in 2c of the main text.

High, medium, and low cooperation are defined as four, three, and two or fewer sticks of honey respectively, for Figure 1c in the main text.

Model with Additional Control Variables

Table S17 shows models with several variables that we expect to be related to social ties based on previous studies of social networks. These models use the same GEE specification described above, but they include additional variables for the ego, the alter, the similarity between ego and alter, and tie-specific variables (e.g. geographic distance between ego and alter). Here, we describe each of these variables and the rationale for their inclusion.

Reciprocity is 1 when is there a social tie from the alter to the ego and 0 otherwise. It indicates the likelihood that social ties are reciprocated. We include this variable to assess the extent to which perceptions of friendship are mutual.

Physical distance is measured as the distance in kilometers between ego's and alter's camps. We do not include this variable in the *gift* network since individuals were restricted to giving gifts within their camps (so all distances in that network are 0). We include this variable because people in close proximity also tend to be similar, and we want to be sure that the results for homophily are not an artifact of this tendency.

The *photographic census* variable indicates which alters appear on the census described above. We include this variable in the campmate networks because some people named friends who did not appear in the census, and we want to be sure that whether or not one appeared in the census is not driving the other results. We do not include it in the *gift* networks because the census was not used to determine who received gifts, and 100% of adults residing in the camps were included in our network ascertainment.

Coefficient of relatedness (r) is the expected similarity in genotypes given kinship (siblings, parent/child = 0.5; grandparent/grandchild, aunt/niece, uncle/nephew = 0.25; etc.). We calculated all possible kinship relationships from available census data on direct relationships (siblings, parent/child), validated these relationships against self-reported family

ties in the *campmate* and *gift* networks, and assigned values to all relationships where relatedness was at least 0.125 (e.g., first cousins). All other relationships were assigned 0 relatedness. Since relatedness for distant relatives is complicated to measure because of inbreeding in the Hadza[5], we restricted our analysis to simple cases of close relatives. Our algorithm ensures that there is no major inbreeding among our estimates for close relatives. We include two versions of this variable, one indicating any relatedness (a dichotomous variable that is 1 if relatedness is greater than or equal to 0.125) and one indicating the strength of the relation (i.e., *r*). We include this variable because people who are related also tend to be similar, and we want to be sure that the results for homophily are not an artifact of this tendency.

Spouses are self-identified husbands and wives. This variable is not included in the *campmate* network regressions because all relationships in those networks are same sex and we did not observe any same sex spouses. *Affinal Family Member* is a pair that is related by marriage, including spouses and any family members genetically related to spouses with a relatedness greater than or equal to 0.125. We include these variables because people who are in the same family also tend to be similar, and we want to be sure that the results for homophily are not an artifact of this tendency.

Ego Age and *Alter Age*, and their similarity, are included to see how age is related to out degree, in degree, and homophily, respectively. *Ego Sex* and *Alter Sex*, and their similarity, are also included to see how sex is related to out degree, in degree, and homophily, respectively. We exclude the alter sex and same sex variables from the *campmate* network regressions because ego and alter sex are always the same in those networks. We include these variables because people of the same sex and age also tend to be similar in other respects, and we want to be sure that the results for homophily on other variables are not an artifact of this tendency.

Intermediate and Full Models Including Control Variables and Fixed Effects

Tables S18–S32 show intermediate models that are the same as those in Tables S2–S16 but that include the variables for age and sex from the models in Table S17. These *intermediate* models show the association of the independent variables with social ties, net of age and sex. Tables S33–S47 show *full* models that include all the control variables from the models in Table S17. The full models show the association of the independent variables with social ties, net of age, sex, and other important control variables as described above.

Both the intermediate and full models of the campmate networks also include fixed effects for the ego's camp of residence and the alter's camp of residence. Meanwhile, the intermediate and full models of the gift networks include fixed effects for only ego's camp of residence (since, by design, ego and alter always reside in the same camp in these networks). We include fixed effects to be sure that environmental and cultural differences between camps are not driving the results.

Note on Exponential Random Graph Models

An alternative way to analyze network data is to use an exponential random graph model (ERGM)[6]. This method fits the observed network to variables that dictate the likelihood of a tie forming between any two nodes. Although ERGMs have the advantage of better addressing dependence between social ties, there are serious issues regarding degeneracies and convergence, especially in models with variables that do not contribute to model fit[7].

When there are no terms in an ERGM model that yield dependence between ties, the likelihood function for the model reduces to a regular general linear model with logit link function[5] as shown in Equation 1, so the coefficients will be identical to those shown in Tables S2-S16 and Tables S18-S32. In Tables S33-S47, the only variable that generates dependence is the reciprocity variable (since the probability of a tie from *i* to *j* is now dependent on the probability of a tie from *j* to *i*), but this is sufficient to require Markov Chain Monte Carlo (MCMC) methods to fit the ERGM. This method will yield somewhat different coefficients (see Tables S48 and S49 for a sample comparison), but we did not find any substantively different results in the simple models. And, consistent with other experience reported in the literature[6], the ERGM including all variables in the full model does not meet convergence criteria even after letting the MCMC run for one month on the most powerful Linux desktop computer currently available.

Models of Similarity in Cooperation

Table S50 shows bivariate interval regressions of similarity in public goods donations on each of the variables indicated. Each model controls for multiple observations of the same ego and multiple observations of the same alter using Huber-White sandwich standard errors estimated via General Estimating Equations as described above. The method for calculating such errors when they are non-nested is described in Miglioretti and Heagerty (2007)[8].

The results show that many kinds of proximity are associated with similarity in cooperation, including *geographic* proximity (measured in kilometers or as an indicator variable that is 1 if two individuals are from the same camp), *genetic* proximity (measured as relatedness), and *social* proximity (measured as the geodesic distance in the camp or gift networks, excluding all ties between genetically related individuals). Age and sex similarity are not significantly related to cooperation similarity. Table S51 combines the significant variables into one model, and the results are shown in Figure 2d of the main text, where we standardize the effect sizes for direct comparison by multiplying each coefficient by the maximum range of the observed variable.

We checked collinearity of the variables by measuring the variance inflation factor (VIF) for all variables in each model. The results suggest multicollinearity is not a serious problem (all values <1.35, far below the threshold of 2.5 that usually warrants concern).

Quantitative Comparison to Two Sets of Modernized Networks

Although the characteristics of modern human social networks that we describe in the main text have been noted and published elsewhere (and selected citations are provided in the main text), we recapitulate many of these properties here in a data set we have analyzed in several of our own previously published papers (the "AddHealth" data), and also in another dataset regarding network structure in highland villages in Honduras (we are grateful to Derek Stafford and Alex Hughes from the University of Michigan for providing access to these data[10,11]). Both these datasets, like the Hadza data reported here, are fully sociocentric, meaning that they capture most of the individuals within a defined population and most of their connections.

In the main text, we report how the Hadza data show the same deviations from random networks that other scholars have demonstrated for modernized networks. For example, we show that Hadza networks differ quantitatively from random networks in ways that are similar, qualitatively speaking, to modern networks in measures of their degree distribution, reciprocity, transitivity, degree assortativity, and homophily.

Here, we quantitatively compare the Hadza data directly to these other two datasets. Such comparisons are challenging, however, given variations in the name generators used, the size of the networks, and other details, but they are still informative. The objective of discerning the ways in which Hadza (and other pre-modern) social networks differ among themselves, and from modernized networks, is an intriguing area for future research, as specific aspects of human social network structure might possibly be more likely to emerge in particular physical or socio-cultural environments.

The National Longitudinal Study of Adolescent Health (Add Health) is a large nationally-representative and publicly available study started in 1994 that explores the causes of health-related behavior of adolescents in grades 7 through 12, and their outcomes in young adulthood[9]. In the first wave, information was gathered from subjects in 142 schools around the US about their social networks. Students were allowed to nominate up to five female and five male friends and were then asked more specific details about those friendships. Specifically, subjects were asked:

- "List your closest male friends. List your best male friend first, then your next best friend, and so on. Girls may include boys who are friends and boyfriends."
- "List your closest female friends. List your best female friend first, then your next best friend, and so on. Boys may include girls who are friends and girlfriends.

For the Honduras data, we had information on two village networks that were roughly similar in size to the Hadza networks (N=181 and N=251). The ties in these villages were mapped in 2010 with a full photographic census of all adult inhabitants, using Netriks software[10,11]. Every individual was asked who they were connected to with the following name generators:

- "Who are your brothers and sisters that you are friends with?"
- "Who are your best friends that are not your brothers and sisters?"
- "Who are you married to, or who are you living with as a husband or wife?"

There are, of course, pertinent differences between the Add Health data and the Hadza data, including the fact that the former is taken from a younger population, and that it is school-based rather than camp-based. And, although the Honduras village networks are comprised of adults who engage in subsistence living, they differ from the Hadza in that they interact regularly with modern markets and they engage primarily in farming rather than hunting and gathering. Also, the name generators are obviously different. Nevertheless, Figures S8-S13 below show that the values measured for the Hadza networks fall within the distribution of responses from these other networks, and in many cases lie close to the center of the distribution.

Figure S8 shows that the degree distributions for each of the school and village networks have significantly fatter tails than a similarly-sized group composed of individuals randomly forming the same number of social ties (Kolmogorov-Smirnov test, p<0.05 for all but two of the networks). Figure S9 shows a histogram of the D statistics used to conduct these tests, which measures the maximum divergence in the cumulative distributions. Since the observed networks always have fatter tails, larger values of D suggest a larger deviation from the expected distribution. The D value measured for the Hadza campmate network falls near the Honduras networks and near the centre of the values measured for Add Health.

Figure S10 shows that most village and school networks exhibit high values for reciprocity. In all but two of the Add Health networks and in both Honduras networks, an "ego" (the naming person) is significantly more likely to name an "alter" (the named person), if the alter reciprocated the social tie by also naming the ego as a friend (indeed, this happens despite the fact that the nominations are private). Moreover, the factor increase in the likelihood of a tie for the Hadza network (44.2) lies between the values for the two village networks (33.4, 56.0) and is near the median value in the Add Health networks of 69.2.

Figure S11 shows that the Honduras and Add Health networks exhibit high levels of transitivity, and the value for the Hadza network lies near both Honduras networks and near the mode of the distribution for all the Add Health networks.

Likewise, there is significant degree assortativity (highly connected individuals tend to connect to other highly connected individuals) in all these networks. Figure S12 shows that one of the Honduras networks falls near the center of the distribution for the Add Health networks, one falls near the upper end of the range, and the Hadza network falls in between these two.

Finally, these analyses also demonstrate that the Add Health networks exhibit homophily. We conducted the same basic regression shown in equation (1) above on each Add Health network separately (these covariates were not presently available for the Honduras data) and show the distribution of the coefficients on the similarity term in Figure S13. All Add Health networks exhibit positive correlation for age and all but one exhibits positive correlation for sex, and, in both cases, the Hadza value falls within the range (albeit, in both cases near the top of the range, suggesting that the Hadza may possibly have an above-average tendency towards homophily).

Other Methods

For the random network degree distribution shown in Figure 1a, we simulated 1,000 Erdos-Renyi networks that had the same number of nodes and edges as the comparison networks.

For Figure 2b of the main text, we used a network permutation method in which we compared the association of the observed network (measured as a coefficient from an OLS regression of ego donation on alter donation) to the association in 1,000 networks where donations were randomly permuted but the network ties remained fixed. The difference between observed and randomly permuted values allows us to construct 95% confidence intervals around the observed association.

All network maps were drawn with Pajek[12].

3-D Network Movies

Two 3-D movies of the campmate social networks are available with this Supporting Information as .mov files. These two movies are 360-degree rotations of 3D representations of the male and female campmate networks using the Fruchterman-Rheingold algorithm in Pajek. Node colors indicate current camp of residence (one node in each camp is labeled with the camp name), and node shapes indicate sex (circles female, squares male). Arrows indicate friendship nominations, and arrow colors indicate type of relation (gray for genetic or affinal family ties, pink for friendship ties).

Supplementary Table S1: Summary Statistics

Variable	*Mean*	*SD*	*Min*	*Max*
Age	38.963	13.371	18	84
Female	0.512	0.501	0	1
UTM 36M Coordinate	746.795	28.032	683.910	770.994
UTM 36M0 Coordinate	9599.909	17.356	9573.929	9622.430
Picture in Census	0.746	0.436	0	1
Marital Status	0.785	0.412	0	1
Reproductive Success (# Children)	3.131	2.305	0	11
Parental Investment	0.057	0.310	0	3
Meat Valuation	3.361	1.816	1	10
Baobab Valuation	3.056	1.761	1	9
Height (cm)	157.606	8.731	134.5	179
Weight (kg)	51.042	7.535	33.4	71.6
Body Fat (proportion of total body weight)	17.246	7.089	5	38.2
Muscle Mass (kg)	40.081	6.195	27.8	58.6
Hand Grip Strength	23.724	8.370	9	41
Public Good Donation	2.267	1.200	0	4
In-Degree Gift Networks	1.935	1.557	0	7
Out-Degree Gift Networks	2.219	0.775	1	3
In-Degree Campmate Networks	3.423	2.796	0	15
Out-Degree Campmate Networks	6.544	2.084	1	10

Supplementary Table S2: GEE Regression of Social Ties on Height

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Height	0.015	0.005	0.006	0.029	0.006	0.000
Alter Height	0.029	0.005	0.000	0.036	0.005	0.000
Ego-Alter Similarity in Height	0.077	0.006	0.000	0.045	0.006	0.000
Residual		6869			2722	
Null Residual		7859			3268	
N		60222			7874	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego.

Supplementary Table S3: GEE Regression of Social Ties on Weight

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Weight	0.038	0.007	0.000	0.036	0.007	0.000
Alter Weight	0.049	0.006	0.000	0.052	0.006	0.000
Ego-Alter Similarity in Weight	0.089	0.007	0.000	0.072	0.007	0.000
Residual		6703			2672	
Null Residual		7897			3350	
N		63380			8784	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego.

Supplementary Table S4: GEE Regression of Social Ties on Body Fat

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Body Fat	0.020	0.009	0.020	0.024	0.008	0.004
Alter Body Fat	0.023	0.007	0.002	0.031	0.008	0.000
Ego-Alter Similarity in Body Fat	0.044	0.010	0.000	0.067	0.011	0.000
Residual		6824			2620	
Null Residual		6881			2683	
N		32530			4164	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego.

Supplementary Table S5: GEE Regression of Social Ties on Muscle Mass

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Muscle Mass	0.011	0.010	0.241	0.008	0.013	0.541
Alter Muscle Mass	0.024	0.010	0.017	0.020	0.010	0.053
Ego-Alter Similarity in Muscle Mass	0.071	0.014	0.000	0.060	0.014	0.000
Residual		6261			2344	
Null Residual		6311			2374	
N		22484			2986	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego.

Supplementary Table S6: GEE Regression of Social Ties on Strength

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Strength	0.048	0.023	0.041	0.051	0.015	0.001
Alter Strength	0.004	0.019	0.811	0.030	0.013	0.027
Ego-Alter Similarity in Strength	0.154	0.019	0.000	0.064	0.016	0.000
Residual		705			723	
Null Residual		786			780	
N		3362			2170	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego.

Supplementary Table **S7: GEE Regression of Social Ties on Marital Status**

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Marital Status	1.620	0.197	0.000	1.351	0.221	0.000
Alter Martial Status	1.674	0.135	0.000	1.955	0.167	0.000
Ego-Alter Similarity in Marital Status	-0.010	0.135	0.940	0.495	0.167	0.003
Residual		7351			2818	
Null Residual		8130			3379	
N		67362			8964	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego.

Supplementary Table S8: GEE Regression of Social Ties on Reproductive Success

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Reproductive Success	0.015	0.017	0.377	0.007	0.030	0.803
Alter Reproductive Success	0.050	0.021	0.014	0.092	0.029	0.002
Ego-Alter Similarity in Reproductive Success	0.034	0.023	0.149	0.064	0.035	0.066
Residual		5039			1847	
Null Residual		5047			1860	
N		15512			1988	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego.

Supplementary Table S9: GEE Regression of Social Ties on Family Investment

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Family Investment	0.213	0.297	0.470	0.059	0.297	0.840
Alter Family Investment	0.409	0.301	0.170	-0.078	0.241	0.750
Ego-Alter Similarity in Family Investment	0.347	0.311	0.260	0.119	0.250	0.630
Residual		5994			2119	
Null Residual		5996			2121	
N		18248			2296	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego.

Supplementary Table 10: GEE Regression of Social Ties on Meat Valuation

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Meat Valuation	0.003	0.039	0.950	-0.039	0.048	0.410
Alter Meat Valuation	0.039	0.046	0.400	-0.059	0.037	0.110
Ego-Alter Similarity in Meat Valuation	0.221	0.046	0.000	-0.003	0.052	0.960
Residual		2338			1122	
Null Residual		2369			1126	
N		6160			1422	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego.

Supplementary Table S11: GEE Regression of Social Ties on Baobab Valuation

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Baobab Valuation	0.001	0.033	0.968	-0.117	0.049	0.016
Alter Baobab Valuation	0.010	0.044	0.821	-0.074	0.039	0.060
Ego-Alter Similarity in Baobab Valuation	0.132	0.045	0.003	-0.011	0.047	0.807
Residual		2357			1116	
Null Residual		2369			1126	
N		6160			1422	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego.

Supplementary Table S12: GEE Regression of Social Ties on In-degree (Gift)

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego In-degree (Gift)	0.438	0.031	0.000	0.500	0.057	0.000
Alter In-degree (Gift)	0.479	0.025	0.000	0.972	0.044	0.000
Ego-Alter Similarity in In-degree (Gift)	0.254	0.030	0.000	0.424	0.050	0.000
Residual		7431			2532	
Null Residual		8154			3394	
N		68462			9124	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego.

Supplementary Table S13: GEE Regression of Social Ties on In-degree (Camp)

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego In-degree (Camp)	0.238	0.018	0.000	0.306	0.027	0.000
Alter In-degree (Camp)	0.422	0.018	0.000	0.386	0.023	0.000
Ego-Alter Similarity in In-degree (Camp)	0.220	0.020	0.000	0.205	0.025	0.000
Residual		6888			2864	
Null Residual		8154			3394	
N		68462			9124	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. In-degree (camp) is measured as in-degree in the campmate network (the number of nonrelatives who want to camp with the subject).

Supplementary Table S14: GEE Regression of Social Ties on Out-degree (Gift)

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Out-degree (Gift)	0.623	0.043	0.000	0.857	0.058	0.000
Alter Out-degree (Gift)	0.546	0.035	0.000	0.588	0.044	0.000
Ego-Alter Similarity in Out-degree (Gift)	0.315	0.043	0.000	0.393	0.045	0.000
Residual		7295			2696	
Null Residual		8154			3394	
N		68462			9124	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Out-degree (gift) is measured as out-degree in the gift network (the number of nonrelatives the subject chooses to give a gift to).

Supplementary Table S15: GEE Regression of Social Ties on Out-degree (Camp)

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Out-degree (Camp)	0.263	0.016	0.000	0.285	0.021	0.000
Alter Out-degree (Camp)	0.185	0.015	0.000	0.280	0.019	0.000
Ego-Alter Similarity in Out-degree (Camp)	0.205	0.016	0.000	0.168	0.023	0.000
Residual		7041			2690	
Null Residual		8154			3394	
N		68462			9124	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Out-degree (camp) is measured as out-degree in the campmate network (the number of nonrelatives the subject names when asked who they would like to camp with).

Supplementary Table S16: GEE Regression of Social Ties on Public Good Donations

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Public Good Donation	0.003	0.031	0.930	-0.022	0.044	0.627
Alter Public Good Donation	-0.026	0.044	0.550	-0.100	0.047	0.035
Ego-Alter Similarity in Public Good Donation	0.250	0.051	0.000	0.174	0.044	0.000
Residual		5879			2096	
Null Residual		5923			2113	
N		18054			2310	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego.

Supplementary Table S17: GEE Regression of Social Ties on Controls

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Reciprocity (Alter Names Ego)	2.082	0.148	0.000	1.686	0.143	0.000
Physical Distance Between Ego and Alter (km)	-0.049	0.004	0.000	---	---	---
Alter is in Photographic Census	1.914	0.155	0.000	---	---	---
Alter is Genetically Related	0.666	0.294	0.024	0.498	0.376	0.186
Alter is an Affinal Family Member (in-law)	0.652	0.149	0.000	0.739	0.207	0.000
Alter is a Spouse	---	---	---	1.299	0.338	0.000
Genetic Relatedness Between Ego and Alter	3.200	0.842	0.000	1.339	0.926	0.148
Ego Age	0.021	0.004	0.000	0.028	0.004	0.000
Alter Age	0.022	0.005	0.000	0.037	0.005	0.000
Similarity in Ego and Alter Age	0.057	0.005	0.000	0.056	0.006	0.000
Ego is Female	-0.196	0.091	0.030	0.088	0.124	0.479
Alter is Female	---	---	---	-0.121	0.143	0.395
Ego and Alter are Same Sex	---	---	---	1.137	0.153	0.000
Residual		4745			2255	
Null Residual		7728			3394	
N		63020			9124	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table S18: GEE Regression of Social Ties on Height

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Height	0.024	0.006	0.000	0.045	0.007	0.000
Alter Height	0.042	0.006	0.000	0.049	0.007	0.000
Ego-Alter Similarity in Height	0.059	0.007	0.000	0.019	0.008	0.017
Ego Age	0.009	0.004	0.019	0.016	0.005	0.000
Alter Age	0.019	0.004	0.000	0.024	0.005	0.000
Similarity in Ego and Alter Age	0.045	0.004	0.000	0.051	0.006	0.000
Ego is Female	0.624	0.113	0.000	0.593	0.123	0.000
Alter is Female	---	---	---	0.476	0.143	0.001
Ego and Alter are Same Sex	---	---	---	0.779	0.137	0.000
Residual		6276			2357	
Null Residual		7581			3268	
N		56802			7874	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table S19: GEE Regression of Social Ties on Weight

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Weight	0.044	0.007	0.000	0.047	0.006	0.000
Alter Weight	0.059	0.007	0.000	0.063	0.008	0.000
Ego-Alter Similarity in Weight	0.071	0.007	0.000	0.050	0.009	0.000
Ego Age	0.009	0.004	0.018	0.018	0.004	0.000
Alter Age	0.020	0.003	0.000	0.025	0.005	0.000
Similarity in Ego and Alter Age	0.041	0.004	0.000	0.048	0.007	0.000
Ego is Female	0.550	0.087	0.000	0.353	0.106	0.001
Alter is Female	---	---	---	0.271	0.132	0.040
Ego and Alter are Same Sex	---	---	---	0.812	0.128	0.000
Residual		6141			2302	
Null Residual		7620			3350	
N		59870			8784	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table S20: GEE Regression of Social Ties on Body Fat

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Body Fat	0.029	0.010	0.003	0.024	0.010	0.010
Alter Body Fat	0.035	0.008	0.000	0.042	0.013	0.001
Ego-Alter Similarity in Body Fat	0.035	0.010	0.001	0.034	0.012	0.004
Ego Age	0.008	0.004	0.041	0.014	0.004	0.002
Alter Age	0.019	0.004	0.000	0.022	0.005	0.000
Similarity in Ego and Alter Age	0.047	0.004	0.000	0.050	0.006	0.000
Ego is Female	-0.447	0.134	0.001	-0.049	0.138	0.722
Alter is Female	---	---	---	-0.353	0.164	0.032
Ego and Alter are Same Sex	---	---	---	0.709	0.132	0.000
Residual		6205			2304	
Null Residual		6669			2683	
N		31518			4164	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table S21: GEE Regression of Social Ties on Muscle Mass

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Muscle Mass	0.028	0.011	0.016	0.013	0.014	0.359
Alter Muscle Mass	0.053	0.013	0.000	0.030	0.018	0.084
Ego-Alter Similarity in Muscle Mass	0.066	0.014	0.000	0.038	0.017	0.027
Ego Age	-0.004	0.004	0.330	-0.002	0.005	0.639
Alter Age	0.011	0.004	0.004	0.009	0.006	0.132
Similarity in Ego and Alter Age	0.030	0.004	0.000	0.033	0.007	0.000
Ego is Female	0.493	0.171	0.004	0.159	0.163	0.331
Alter is Female	---	---	---	0.155	0.198	0.434
Ego and Alter are Same Sex	---	---	---	0.689	0.160	0.000
Residual		5888			2079	
Null Residual		6106			2374	
N		21644			2986	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table S22: GEE Regression of Social Ties on Strength

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Strength	0.078	0.031	0.013	0.085	0.019	0.000
Alter Strength	0.057	0.026	0.026	0.080	0.019	0.000
Ego-Alter Similarity in Strength	0.101	0.029	0.000	0.042	0.021	0.040
Ego Age	0.028	0.010	0.005	0.031	0.008	0.000
Alter Age	0.041	0.009	0.000	0.047	0.009	0.000
Similarity in Ego and Alter Age	0.033	0.011	0.002	0.041	0.013	0.002
Ego is Female	2.153	0.490	0.000	0.760	0.281	0.007
Alter is Female	---	---	---	1.171	0.356	0.001
Ego and Alter are Same Sex	---	---	---	0.688	0.311	0.027
Residual		547			595	
Null Residual		680			780	
N		2738			2170	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table S23: GEE Regression of Social Ties on Marital Status

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Marital Status	1.179	0.188	0.000	1.111	0.214	0.000
Alter Martial Status	1.054	0.157	0.000	1.789	0.222	0.000
Ego-Alter Similarity in Marital Status	-0.486	0.152	0.001	0.077	0.186	0.679
Ego Age	0.014	0.004	0.000	0.023	0.005	0.000
Alter Age	0.026	0.004	0.000	0.023	0.006	0.000
Similarity in Ego and Alter Age	0.058	0.004	0.000	0.057	0.007	0.000
Ego is Female	-0.158	0.077	0.039	0.018	0.109	0.867
Alter is Female	---	---	---	-0.176	0.131	0.180
Ego and Alter are Same Sex	---	---	---	1.020	0.131	0.000
Residual		6454			2349	
Null Residual		7704			3379	
N		61964			8964	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table S24: GEE Regression of Social Ties on Reproductive Success

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Reproductive Success	0.035	0.020	0.088	0.044	0.025	0.081
Alter Reproductive Success	0.068	0.028	0.013	0.162	0.043	0.000
Ego-Alter Similarity in Reproductive Success	0.031	0.023	0.173	0.072	0.040	0.069
Ego Age	-0.004	0.004	0.353	-0.002	0.005	0.740
Alter Age	0.005	0.005	0.387	-0.008	0.008	0.337
Similarity in Ego and Alter Age	0.014	0.006	0.010	0.022	0.009	0.009
Ego is Female	-0.078	0.065	0.229	0.133	0.093	0.153
Alter is Female	---	---	---	-0.161	0.153	0.293
Ego and Alter are Same Sex	---	---	---	1.023	0.147	0.000
Residual		4710			1625	
Null Residual		4782			1860	
N		14124			1988	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table S25: GEE Regression of Social Ties on Parental Investment

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Parental Investment	0.063	0.298	0.833	-0.239	0.230	0.299
Alter Parental Investment	0.261	0.346	0.451	-0.482	0.255	0.059
Ego-Alter Similarity in Parental Investment	0.187	0.346	0.589	-0.448	0.239	0.061
Ego Age	0.000	0.003	0.932	0.000	0.004	0.912
Alter Age	0.011	0.004	0.007	0.005	0.007	0.424
Similarity in Ego and Alter Age	0.017	0.005	0.000	0.024	0.008	0.002
Ego is Female	-0.146	0.057	0.010	0.054	0.083	0.512
Alter is Female	---	---	---	-0.107	0.137	0.437
Ego and Alter are Same Sex	---	---	---	0.995	0.132	0.000
Residual		5698			1883	
Null Residual		5795			2121	
N		17492			2296	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table S26: GEE Regression of Social Ties on Meat Valuation

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Meat Valuation	0.030	0.058	0.612	-0.043	0.059	0.466
Alter Meat Valuation	0.065	0.053	0.216	-0.083	0.045	0.064
Ego-Alter Similarity in Meat Valuation	0.211	0.045	0.000	-0.094	0.064	0.140
Ego Age	-0.007	0.005	0.184	-0.001	0.006	0.896
Alter Age	0.003	0.005	0.554	0.010	0.008	0.213
Similarity in Ego and Alter Age	0.017	0.005	0.001	0.033	0.010	0.001
Ego is Female	-0.177	0.114	0.122	0.266	0.136	0.051
Alter is Female	---	---	---	-0.053	0.175	0.761
Ego and Alter are Same Sex	---	---	---	0.717	0.172	0.000
Residual		2284			1033	
Null Residual		2369			1126	
N		6160			1422	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table S27: GEE Regression of Social Ties on Baobab Valuation

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Baobab Valuation	0.036	0.033	0.272	-0.090	0.043	0.039
Alter Baobab Valuation	0.036	0.046	0.433	-0.054	0.043	0.207
Ego-Alter Similarity in Baobab Valuation	0.109	0.050	0.028	-0.051	0.053	0.333
Ego Age	-0.006	0.005	0.273	-0.001	0.005	0.793
Alter Age	0.004	0.005	0.389	0.009	0.008	0.237
Similarity in Ego and Alter Age	0.018	0.005	0.001	0.032	0.010	0.001
Ego is Female	-0.076	0.111	0.492	0.207	0.131	0.112
Alter is Female	---	---	---	-0.053	0.172	0.758
Ego and Alter are Same Sex	---	---	---	0.698	0.171	0.000
Residual		2284			1033	
Null Residual		2369			1126	
N		6160			1422	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table S28: GEE Regression of Social Ties on In-degree (Gift)

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego In-degree (Gift)	0.281	0.033	0.000	0.373	0.048	0.000
Alter In-degree (Gift)	0.335	0.028	0.000	0.917	0.046	0.000
Ego-Alter Similarity in In-degree (Gift)	0.118	0.033	0.000	0.298	0.048	0.000
Ego Age	0.020	0.003	0.000	0.028	0.005	0.000
Alter Age	0.029	0.003	0.000	0.029	0.006	0.000
Similarity in Ego and Alter Age	0.056	0.004	0.000	0.065	0.007	0.000
Ego is Female	0.047	0.087	0.590	0.059	0.122	0.625
Alter is Female	---	---	---	0.087	0.143	0.541
Ego and Alter are Same Sex	---	---	---	0.967	0.137	0.000
Residual		6396			2062	
Null Residual		7728			3394	
N		63020			9124	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks. In-degree (gift) is measured as in-degree in the gift network (the number of nonrelatives who give a gift to the subject).

Supplementary Table S29: GEE Regression of Social Ties on In-degree (Camp)

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego In-degree (Camp)	0.159	0.018	0.000	0.209	0.023	0.000
Alter In-degree (Camp)	0.363	0.019	0.000	0.300	0.027	0.000
Ego-Alter Similarity in In-degree (Camp)	0.119	0.021	0.000	0.091	0.027	0.001
Ego Age	0.019	0.003	0.000	0.029	0.004	0.000
Alter Age	0.021	0.004	0.000	0.032	0.005	0.000
Similarity in Ego and Alter Age	0.050	0.004	0.000	0.061	0.006	0.000
Ego is Female	0.326	0.086	0.000	0.154	0.118	0.190
Alter is Female	---	---	---	0.080	0.133	0.547
Ego and Alter are Same Sex	---	---	---	0.922	0.133	0.000
Residual		6071			2356	
Null Residual		7728			3394	
N		63020			9124	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks. In-degree (camp) is measured as in-degree in the campmate network (the number of nonrelatives who want to camp with the subject).

Supplementary Table S30: GEE Regression of Social Ties on Out-degree (Gift)

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Out-degree (Gift)	0.466	0.046	0.000	0.852	0.050	0.000
Alter Out-degree (Gift)	0.384	0.042	0.000	0.487	0.062	0.000
Ego-Alter Similarity in Out-degree (Gift)	0.151	0.052	0.003	0.237	0.060	0.000
Ego Age	0.018	0.003	0.000	0.023	0.004	0.000
Alter Age	0.030	0.003	0.000	0.035	0.005	0.000
Similarity in Ego and Alter Age	0.048	0.004	0.000	0.050	0.007	0.000
Ego is Female	-0.141	0.082	0.087	0.032	0.081	0.696
Alter is Female	---	---	---	-0.150	0.135	0.268
Ego and Alter are Same Sex	---	---	---	0.995	0.134	0.000
Residual		6378			2228	
Null Residual		7728			3394	
N		63020			9124	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks. Out-degree (gift) is measured as out-degree in the gift network (the number of nonrelatives the subject chooses to give a gift to).

Supplementary Table S31: GEE Regression of Social Ties on Out-degree (Camp)

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Out-degree (Camp)	0.233	0.017	0.000	0.245	0.021	0.000
Alter Out-degree (Camp)	0.150	0.018	0.000	0.221	0.025	0.000
Ego-Alter Similarity in Out-degree (Camp)	0.142	0.022	0.000	0.098	0.027	0.000
Ego Age	0.012	0.003	0.000	0.022	0.004	0.000
Alter Age	0.026	0.003	0.000	0.031	0.005	0.000
Similarity in Ego and Alter Age	0.042	0.004	0.000	0.049	0.007	0.000
Ego is Female	0.541	0.082	0.000	0.424	0.110	0.000
Alter is Female	---	---	---	0.229	0.128	0.074
Ego and Alter are Same Sex	---	---	---	0.892	0.129	0.000
Residual		6239			2319	
Null Residual		7728			3394	
N		63020			9124	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks. Out-degree (camp) is measured as out-degree in the campmate network (the number of nonrelatives the subject names when asked who they would like to camp with).

Supplementary Table S32: GEE Regression of Social Ties on Public Good Donations

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Public Good Donation	0.018	0.035	0.615	0.030	0.038	0.431
Alter Public Good Donation	-0.003	0.049	0.960	-0.056	0.060	0.355
Ego-Alter Similarity in Public Good Donation	0.239	0.055	0.000	0.063	0.054	0.241
Ego Age	0.000	0.003	0.878	0.001	0.004	0.750
Alter Age	0.011	0.004	0.004	0.003	0.006	0.622
Similarity in Ego and Alter Age	0.017	0.005	0.000	0.022	0.008	0.003
Ego is Female	-0.131	0.061	0.032	0.045	0.086	0.605
Alter is Female	---	---	---	-0.090	0.136	0.509
Ego and Alter are Same Sex	---	---	---	1.012	0.135	0.000
Residual		5598			1864	
Null Residual		5722			2113	
N		17302			2310	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table S33: GEE Regression of Social Ties on Height

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Height	0.022	0.007	0.001	0.038	0.007	0.000
Alter Height	0.037	0.008	0.000	0.042	0.007	0.000
Ego-Alter Similarity in Height	0.045	0.007	0.000	0.020	0.009	0.019
Reciprocity (Alter Names Ego)	1.926	0.147	0.000	1.422	0.137	0.000
Physical Distance Between Ego and Alter (km)	-0.049	0.004	0.000	---	---	---
Alter is in Photographic Census	1.590	0.147	0.000	---	---	---
Alter is Genetically Related	0.567	0.289	0.050	0.166	0.369	0.653
Alter is an Affinal Family Member (in-law)	0.661	0.142	0.000	0.625	0.199	0.002
Alter is a Spouse	---	---	---	1.386	0.320	0.000
Genetic Relatedness Between Ego and Alter	3.237	0.828	0.000	1.539	0.890	0.084
Ego Age	0.007	0.004	0.065	0.012	0.005	0.009
Alter Age	0.015	0.004	0.001	0.021	0.005	0.000
Similarity in Ego and Alter Age	0.043	0.005	0.000	0.040	0.006	0.000
Ego is Female	0.419	0.138	0.002	0.502	0.137	0.000
Alter is Female	---	---	---	0.346	0.152	0.023
Ego and Alter are Same Sex	---	---	---	1.017	0.160	0.000
Residual		4576			2118	
Null Residual		7581			3268	
N		56802			7874	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table S34: GEE Regression of Social Ties on Weight

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Weight	0.037	0.007	0.000	0.037	0.006	0.000
Alter Weight	0.050	0.008	0.000	0.058	0.008	0.000
Ego-Alter Similarity in Weight	0.052	0.008	0.000	0.048	0.009	0.000
Reciprocity (Alter Names Ego)	1.904	0.146	0.000	1.371	0.136	0.000
Physical Distance Between Ego and Alter (km)	-0.048	0.004	0.000	---	---	---
Alter is in Photographic Census	1.523	0.146	0.000	---	---	---
Alter is Genetically Related	0.501	0.297	0.092	0.151	0.386	0.696
Alter is an Affinal Family Member (in-law)	0.622	0.146	0.000	0.635	0.205	0.002
Alter is a Spouse	---	---	---	1.397	0.322	0.000
Genetic Relatedness Between Ego and Alter	3.295	0.855	0.000	1.439	0.943	0.127
Ego Age	0.007	0.004	0.068	0.013	0.005	0.004
Alter Age	0.017	0.004	0.000	0.022	0.005	0.000
Similarity in Ego and Alter Age	0.040	0.005	0.000	0.038	0.007	0.000
Ego is Female	0.353	0.098	0.000	0.298	0.117	0.011
Alter is Female	---	---	---	0.190	0.143	0.185
Ego and Alter are Same Sex	---	---	---	1.063	0.150	0.000
Residual		4512			2077	
Null Residual		7620			3350	
N		59870			8784	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table S35: GEE Regression of Social Ties on Body Fat

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Body Fat	0.023	0.010	0.016	0.017	0.010	0.079
Alter Body Fat	0.025	0.008	0.002	0.041	0.012	0.001
Ego-Alter Similarity in Body Fat	0.020	0.010	0.044	0.025	0.012	0.035
Reciprocity (Alter Names Ego)	1.922	0.144	0.000	1.409	0.137	0.000
Physical Distance Between Ego and Alter (km)	-0.048	0.004	0.000	---	---	---
Alter is in Photographic Census	1.592	0.142	0.000	---	---	---
Alter is Genetically Related	0.531	0.288	0.065	0.323	0.360	0.370
Alter is an Affinal Family Member (in-law)	0.604	0.144	0.000	0.589	0.204	0.004
Alter is a Spouse	---	---	---	1.438	0.322	0.000
Genetic Relatedness Between Ego and Alter	3.316	0.827	0.000	1.174	0.885	0.185
Ego Age	0.006	0.004	0.106	0.010	0.004	0.022
Alter Age	0.016	0.004	0.000	0.019	0.005	0.000
Similarity in Ego and Alter Age	0.043	0.005	0.000	0.039	0.006	0.000
Ego is Female	-0.480	0.135	0.000	0.001	0.140	0.992
Alter is Female	---	---	---	-0.403	0.176	0.022
Ego and Alter are Same Sex	---	---	---	0.996	0.152	0.000
Residual		4520			2069	
Null Residual		6669			2683	
N		31518			4164	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table S36: GEE Regression of Social Ties on Muscle Mass

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Muscle Mass	0.012	0.013	0.355	0.002	0.017	0.884
Alter Muscle Mass	0.054	0.013	0.000	0.023	0.019	0.212
Ego-Alter Similarity in Muscle Mass	0.035	0.014	0.010	0.033	0.019	0.083
Reciprocity (Alter Names Ego)	1.799	0.144	0.000	1.083	0.137	0.000
Physical Distance Between Ego and Alter (km)	-0.049	0.004	0.000	---	---	---
Alter is in Photographic Census	1.427	0.153	0.000	---	---	---
Alter is Genetically Related	0.446	0.294	0.129	0.259	0.365	0.478
Alter is an Affinal Family Member (in-law)	0.574	0.144	0.000	0.531	0.202	0.009
Alter is a Spouse	---	---	---	1.485	0.319	0.000
Genetic Relatedness Between Ego and Alter	3.603	0.872	0.000	1.491	0.906	0.100
Ego Age	-0.009	0.004	0.040	-0.006	0.005	0.194
Alter Age	0.014	0.005	0.002	0.007	0.006	0.235
Similarity in Ego and Alter Age	0.029	0.005	0.000	0.024	0.007	0.000
Ego is Female	0.294	0.188	0.118	0.058	0.194	0.764
Alter is Female	---	---	---	0.049	0.206	0.812
Ego and Alter are Same Sex	---	---	---	0.980	0.189	0.000
Residual		4312			1902	
Null Residual		6106			2374	
N		21644			2986	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table S37: GEE Regression of Social Ties on Strength

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Strength	0.075	0.034	0.028	0.074	0.019	0.000
Alter Strength	0.006	0.028	0.818	0.073	0.023	0.002
Ego-Alter Similarity in Strength	0.107	0.034	0.001	0.044	0.020	0.031
Reciprocity (Alter Names Ego)	0.764	0.375	0.041	1.456	0.299	0.000
Physical Distance Between Ego and Alter (km)	-0.311	0.100	0.002	---	---	---
Alter is in Photographic Census	1.547	0.364	0.000	---	---	---
Alter is Genetically Related	0.789	0.788	0.317	0.781	0.602	0.194
Alter is an Affinal Family Member (in-law)	1.018	0.341	0.003	1.140	0.322	0.000
Alter is a Spouse	---	---	---	-0.333	0.583	0.568
Genetic Relatedness Between Ego and Alter	0.691	1.868	0.711	0.517	2.091	0.805
Ego Age	0.026	0.010	0.010	0.024	0.009	0.005
Alter Age	0.028	0.010	0.006	0.045	0.010	0.000
Similarity in Ego and Alter Age	0.026	0.011	0.015	0.040	0.012	0.001
Ego is Female	1.398	0.494	0.005	0.513	0.298	0.086
Alter is Female	---	---	---	1.064	0.393	0.007
Ego and Alter are Same Sex	---	---	---	0.673	0.334	0.044
Residual		477			553	
Null Residual		680			780	
N		2738			2170	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table **S38: GEE Regression of Social Ties on Marital Status**

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Marital Status	0.956	0.182	0.000	0.700	0.209	0.001
Alter Martial Status	0.389	0.149	0.009	1.528	0.229	0.000
Ego-Alter Similarity in Marital Status	-0.272	0.139	0.051	0.026	0.198	0.895
Reciprocity (Alter Names Ego)	2.007	0.146	0.000	1.444	0.144	0.000
Physical Distance Between Ego and Alter (km)	-0.049	0.004	0.000	---	---	---
Alter is in Photographic Census	1.752	0.163	0.000	---	---	---
Alter is Genetically Related	0.605	0.300	0.044	0.460	0.394	0.242
Alter is an Affinal Family Member (in-law)	0.580	0.150	0.000	0.523	0.207	0.012
Alter is a Spouse	---	---	---	1.171	0.332	0.000
Genetic Relatedness Between Ego and Alter	3.362	0.852	0.000	1.443	0.955	0.131
Ego Age	0.012	0.004	0.002	0.021	0.005	0.000
Alter Age	0.020	0.004	0.000	0.022	0.006	0.000
Similarity in Ego and Alter Age	0.052	0.005	0.000	0.049	0.007	0.000
Ego is Female	-0.262	0.087	0.003	0.046	0.121	0.706
Alter is Female	---	---	---	-0.223	0.145	0.124
Ego and Alter are Same Sex	---	---	---	1.191	0.156	0.000
Residual		4680			2139	
Null Residual		7704			3379	
N		61964			8964	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table S39: GEE Regression of Social Ties on Reproductive Success

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Reproductive Success	0.008	0.027	0.762	-0.012	0.029	0.662
Alter Reproductive Success	0.054	0.032	0.091	0.142	0.047	0.003
Ego-Alter Similarity in Reproductive Success	0.026	0.026	0.333	0.054	0.043	0.208
Reciprocity (Alter Names Ego)	1.799	0.154	0.000	0.995	0.141	0.000
Physical Distance Between Ego and Alter (km)	-0.048	0.005	0.000	---	---	---
Alter is in Photographic Census	1.161	0.170	0.000	---	---	---
Alter is Genetically Related	0.413	0.329	0.210	0.487	0.402	0.226
Alter is an Affinal Family Member (in-law)	0.532	0.170	0.002	0.409	0.222	0.066
Alter is a Spouse	---	---	---	1.748	0.346	0.000
Genetic Relatedness Between Ego and Alter	3.909	1.035	0.000	0.716	0.967	0.459
Ego Age	-0.004	0.004	0.333	0.001	0.005	0.870
Alter Age	0.004	0.006	0.541	-0.008	0.009	0.341
Similarity in Ego and Alter Age	0.021	0.006	0.001	0.016	0.009	0.066
Ego is Female	-0.205	0.083	0.013	0.167	0.113	0.140
Alter is Female	---	---	---	-0.223	0.163	0.171
Ego and Alter are Same Sex	---	---	---	1.289	0.172	0.000
Residual		3419			1484	
Null Residual		4782			1860	
N		14124			1988	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table S40: GEE Regression of Social Ties on Parental Investment

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Parental Investment	-0.230	0.249	0.355	-0.261	0.352	0.459
Alter Parental Investment	-0.001	0.287	0.999	-0.575	0.366	0.116
Ego-Alter Similarity in Parental Investment	-0.083	0.285	0.772	-0.454	0.351	0.196
Reciprocity (Alter Names Ego)	1.767	0.142	0.000	0.930	0.135	0.000
Physical Distance Between Ego and Alter (km)	-0.050	0.005	0.000	---	---	---
Alter is in Photographic Census	1.151	0.156	0.000	---	---	---
Alter is Genetically Related	0.372	0.297	0.210	0.426	0.370	0.249
Alter is an Affinal Family Member (in-law)	0.420	0.147	0.004	0.427	0.213	0.045
Alter is a Spouse	---	---	---	1.771	0.339	0.000
Genetic Relatedness Between Ego and Alter	3.656	0.899	0.000	1.009	0.903	0.264
Ego Age	-0.004	0.004	0.317	-0.003	0.005	0.547
Alter Age	0.008	0.005	0.071	0.005	0.007	0.498
Similarity in Ego and Alter Age	0.022	0.005	0.000	0.016	0.008	0.040
Ego is Female	---	---	---	0.050	0.101	0.625
Alter is Female	---	---	---	-0.152	0.148	0.305
Ego and Alter are Same Sex	-0.250	0.069	0.000	1.305	0.159	0.000
Residual		4191			1719	
Null Residual		5795			2121	
N		17492			2296	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table S41: GEE Regression of Social Ties on Meat Valuation

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Meat Valuation	-0.011	0.064	0.857	-0.027	0.058	0.644
Alter Meat Valuation	0.009	0.063	0.884	-0.080	0.052	0.125
Ego-Alter Similarity in Meat Valuation	0.140	0.056	0.013	-0.052	0.068	0.439
Reciprocity (Alter Names Ego)	1.721	0.210	0.000	1.212	0.200	0.000
Physical Distance Between Ego and Alter (km)	-0.060	0.010	0.000	---	---	---
Alter is in Photographic Census	1.066	0.218	0.000	---	---	---
Alter is Genetically Related	-0.122	0.509	0.811	0.134	0.601	0.824
Alter is an Affinal Family Member (in-law)	0.500	0.205	0.015	0.215	0.318	0.498
Alter is a Spouse	---	---	---	2.431	0.512	0.000
Genetic Relatedness Between Ego and Alter	4.258	1.485	0.004	0.965	1.316	0.464
Ego Age	-0.010	0.006	0.082	-0.003	0.006	0.592
Alter Age	0.006	0.007	0.349	0.008	0.008	0.309
Similarity in Ego and Alter Age	0.024	0.008	0.002	0.020	0.010	0.050
Ego is Female	-0.323	0.129	0.013	0.293	0.157	0.063
Alter is Female	---	---	---	-0.148	0.187	0.428
Ego and Alter are Same Sex	---	---	---	1.161	0.212	0.000
Residual		1561			901	
Null Residual		2369			1126	
N		6160			1422	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table S42: GEE Regression of Social Ties on Baobab Valuation

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Baobab Valuation	0.017	0.038	0.659	-0.107	0.053	0.043
Alter Baobab Valuation	0.023	0.050	0.643	-0.057	0.046	0.221
Ego-Alter Similarity in Baobab Valuation	0.099	0.053	0.064	-0.057	0.062	0.359
Reciprocity (Alter Names Ego)	1.743	0.211	0.000	1.202	0.200	0.000
Physical Distance Between Ego and Alter (km)	-0.060	0.010	0.000	---	---	---
Alter is in Photographic Census	1.063	0.216	0.000	---	---	---
Alter is Genetically Related	-0.073	0.513	0.887	0.153	0.601	0.799
Alter is an Affinal Family Member (in-law)	0.508	0.203	0.012	0.209	0.315	0.506
Alter is a Spouse	---	---	---	2.471	0.513	0.000
Genetic Relatedness Between Ego and Alter	4.147	1.473	0.005	0.976	1.304	0.454
Ego Age	-0.009	0.006	0.123	-0.004	0.006	0.468
Alter Age	0.008	0.007	0.268	0.008	0.008	0.336
Similarity in Ego and Alter Age	0.023	0.007	0.002	0.019	0.010	0.057
Ego is Female	-0.236	0.129	0.068	0.214	0.157	0.173
Alter is Female	---	---	---	-0.142	0.189	0.451
Ego and Alter are Same Sex	---	---	---	1.171	0.216	0.000
Residual		1566			899	
Null Residual		2369			1126	
N		6160			1422	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table S43: GEE Regression of Social Ties on In-degree (Gift)

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego In-degree (Gift)	0.240	0.034	0.000	0.210	0.057	0.000
Alter In-degree (Gift)	0.205	0.033	0.000	0.905	0.048	0.000
Ego-Alter Similarity in In-degree (Gift)	0.081	0.036	0.025	0.264	0.051	0.000
Reciprocity (Alter Names Ego)	1.930	0.146	0.000	1.285	0.172	0.000
Physical Distance Between Ego and Alter (km)	-0.049	0.004	0.000	---	---	---
Alter is in Photographic Census	1.686	0.164	0.000	---	---	---
Alter is Genetically Related	0.771	0.292	0.008	0.750	0.391	0.055
Alter is an Affinal Family Member (in-law)	0.544	0.148	0.000	0.408	0.213	0.056
Alter is a Spouse	---	---	---	1.662	0.355	0.000
Genetic Relatedness Between Ego and Alter	3.092	0.836	0.000	1.173	0.943	0.214
Ego Age	0.017	0.004	0.000	0.026	0.005	0.000
Alter Age	0.022	0.004	0.000	0.025	0.006	0.000
Similarity in Ego and Alter Age	0.053	0.005	0.000	0.056	0.007	0.000
Ego is Female	-0.114	0.089	0.196	0.000	0.135	0.998
Alter is Female	---	---	---	0.071	0.154	0.643
Ego and Alter are Same Sex	---	---	---	1.247	0.164	0.000
Residual		4649			1870	
Null Residual		7728			3394	
N		63020			9124	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks. In-degree (gift) is measured as in-degree in the gift network (the number of nonrelatives who give a gift to the subject).

Supplementary Table S44: GEE Regression of Social Ties on In-degree (Camp)

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego In-degree (Camp)	0.103	0.020	0.000	0.149	0.027	0.000
Alter In-degree (Camp)	0.316	0.022	0.000	0.277	0.028	0.000
Ego-Alter Similarity in In-degree (Camp)	0.105	0.023	0.000	0.083	0.030	0.006
Reciprocity (Alter Names Ego)	1.902	0.158	0.000	1.393	0.149	0.000
Physical Distance Between Ego and Alter (km)	-0.050	0.004	0.000	---	---	---
Alter is in Photographic Census	1.068	0.179	0.000	---	---	---
Alter is Genetically Related	0.700	0.302	0.020	0.494	0.358	0.168
Alter is an Affinal Family Member (in-law)	0.489	0.162	0.003	0.467	0.215	0.030
Alter is a Spouse	---	---	---	1.614	0.357	0.000
Genetic Relatedness Between Ego and Alter	3.372	0.859	0.000	1.339	0.890	0.132
Ego Age	0.019	0.004	0.000	0.025	0.004	0.000
Alter Age	0.016	0.005	0.001	0.029	0.005	0.000
Similarity in Ego and Alter Age	0.053	0.005	0.000	0.051	0.006	0.000
Ego is Female	0.118	0.098	0.228	0.114	0.129	0.378
Alter is Female	---	---	---	0.003	0.146	0.983
Ego and Alter are Same Sex	---	---	---	1.137	0.154	0.000
Residual		4482			2131	
Null Residual		7728			3394	
N		63020			9124	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks. In-degree (camp) is measured as in-degree in the campmate network (the number of nonrelatives who want to camp with the subject).

Supplementary Table S45: GEE Regression of Social Ties on Out-degree (Gift)

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Out-degree (Gift)	0.523	0.048	0.000	0.902	0.050	0.000
Alter Out-degree (Gift)	0.186	0.051	0.000	0.473	0.070	0.000
Ego-Alter Similarity in Out-degree (Gift)	0.085	0.054	0.111	0.137	0.063	0.030
Reciprocity (Alter Names Ego)	1.943	0.141	0.000	1.097	0.146	0.000
Physical Distance Between Ego and Alter (km)	-0.049	0.004	0.000	---	---	---
Alter is in Photographic Census	1.669	0.164	0.000	---	---	---
Alter is Genetically Related	0.785	0.285	0.006	1.247	0.395	0.002
Alter is an Affinal Family Member (in-law)	0.680	0.142	0.000	0.779	0.207	0.000
Alter is a Spouse	---	---	---	1.549	0.342	0.000
Genetic Relatedness Between Ego and Alter	3.337	0.823	0.000	0.742	0.935	0.427
Ego Age	0.013	0.004	0.000	0.018	0.004	0.000
Alter Age	0.021	0.004	0.000	0.033	0.005	0.000
Similarity in Ego and Alter Age	0.046	0.005	0.000	0.044	0.007	0.000
Ego is Female	-0.260	0.084	0.002	0.026	0.093	0.783
Alter is Female	---	---	---	-0.216	0.149	0.147
Ego and Alter are Same Sex	---	---	---	1.309	0.161	0.000
Residual		4596			1990	
Null Residual		7728			3394	
N		63020			9124	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks. Out-degree (gift) is measured as out-degree in the gift network (the number of nonrelatives the subject chooses to give a gift to).

Supplementary Table S46: GEE Regression of Social Ties on Out-degree (Camp)

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Out-degree (Camp)	0.271	0.016	0.000	0.236	0.022	0.000
Alter Out-degree (Camp)	0.075	0.025	0.003	0.213	0.028	0.000
Ego-Alter Similarity in Out-degree (Camp)	0.093	0.023	0.000	0.084	0.030	0.005
Reciprocity (Alter Names Ego)	1.880	0.147	0.000	1.204	0.144	0.000
Physical Distance Between Ego and Alter (km)	-0.050	0.004	0.000	---	---	---
Alter is in Photographic Census	1.618	0.173	0.000	---	---	---
Alter is Genetically Related	0.777	0.290	0.008	0.978	0.370	0.008
Alter is an Affinal Family Member (in-law)	0.627	0.146	0.000	0.648	0.204	0.002
Alter is a Spouse	---	---	---	1.562	0.337	0.000
Genetic Relatedness Between Ego and Alter	3.566	0.846	0.000	0.943	0.919	0.305
Ego Age	0.005	0.003	0.099	0.017	0.004	0.000
Alter Age	0.019	0.004	0.000	0.027	0.005	0.000
Similarity in Ego and Alter Age	0.041	0.005	0.000	0.041	0.007	0.000
Ego is Female	0.387	0.094	0.000	0.405	0.125	0.001
Alter is Female	---	---	---	0.155	0.141	0.272
Ego and Alter are Same Sex	---	---	---	1.175	0.154	0.000
Residual		4499			2081	
Null Residual		7728			3394	
N		63020			9124	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks. Out-degree (camp) is measured as out-degree in the campmate network (the number of nonrelatives the subject names when asked who they would like to camp with).

Supplementary Table S47: GEE Regression of Social Ties on Public Good Donations

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Public Good Donation	0.032	0.039	0.417	0.058	0.043	0.177
Alter Public Good Donation	-0.015	0.048	0.749	-0.057	0.063	0.366
Ego-Alter Similarity in Public Good Donation	0.149	0.051	0.003	0.051	0.057	0.370
Reciprocity (Alter Names Ego)	1.686	0.144	0.000	0.936	0.137	0.000
Physical Distance Between Ego and Alter (km)	-0.049	0.004	0.000	---	---	---
Alter is in Photographic Census	1.231	0.165	0.000	---	---	---
Alter is Genetically Related	0.292	0.308	0.343	0.420	0.377	0.264
Alter is an Affinal Family Member (in-law)	0.444	0.147	0.003	0.460	0.214	0.031
Alter is a Spouse	---	---	---	1.818	0.346	0.000
Genetic Relatedness Between Ego and Alter	3.953	0.914	0.000	1.170	0.913	0.200
Ego Age	-0.005	0.003	0.181	-0.001	0.004	0.777
Alter Age	0.009	0.005	0.061	0.001	0.007	0.860
Similarity in Ego and Alter Age	0.021	0.005	0.000	0.015	0.008	0.055
Ego is Female	-0.262	0.073	0.000	0.035	0.104	0.740
Alter is Female	---	---	---	-0.132	0.147	0.371
Ego and Alter are Same Sex	---	---	---	1.327	0.162	0.000
Residual		4153			2077	
Null Residual		5722			3350	
N		17302			8784	

GEE logit regression of presence of social tie from ego to alter on ego and alter attributes, clustering standard errors on each ego. Model includes camp fixed effects (not shown) for both the ego and the alter in campmate networks and for only the ego in gift networks.

Supplementary Table 48: ERGM Regression of Social Ties on Public Good Donations

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Public Good Donation	0.022	0.050	0.665	0.028	0.036	0.444
Alter Public Good Donation	-0.006	0.050	0.908	-0.069	0.036	0.059
Ego-Alter Similarity in Public Good Donation	0.257	0.044	0.000	0.160	0.036	0.000
Reciprocity	4.803	0.174	0.000	3.710	0.133	0.000

Supplementary Table 49: GEE Regression of Social Ties on Public Good Donations

	Dependent Variable: Ego Wants to Camp with Alter			***Dependent Variable: Ego Gives Gift to Alter***		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Ego Public Good Donation	0.012	0.031	0.708	0.008	0.043	0.843
Alter Public Good Donation	-0.026	0.043	0.538	-0.100	0.050	0.044
Ego-Alter Similarity in Public Good Donation	0.186	0.048	0.000	0.135	0.047	0.004
Reciprocity	2.847	0.112	0.000	1.713	0.121	0.000

Supplementary Table S50: Bivariate Relationship Between Similarity in Public Good Game Contributions and Various Measures of Proximity and Similarity

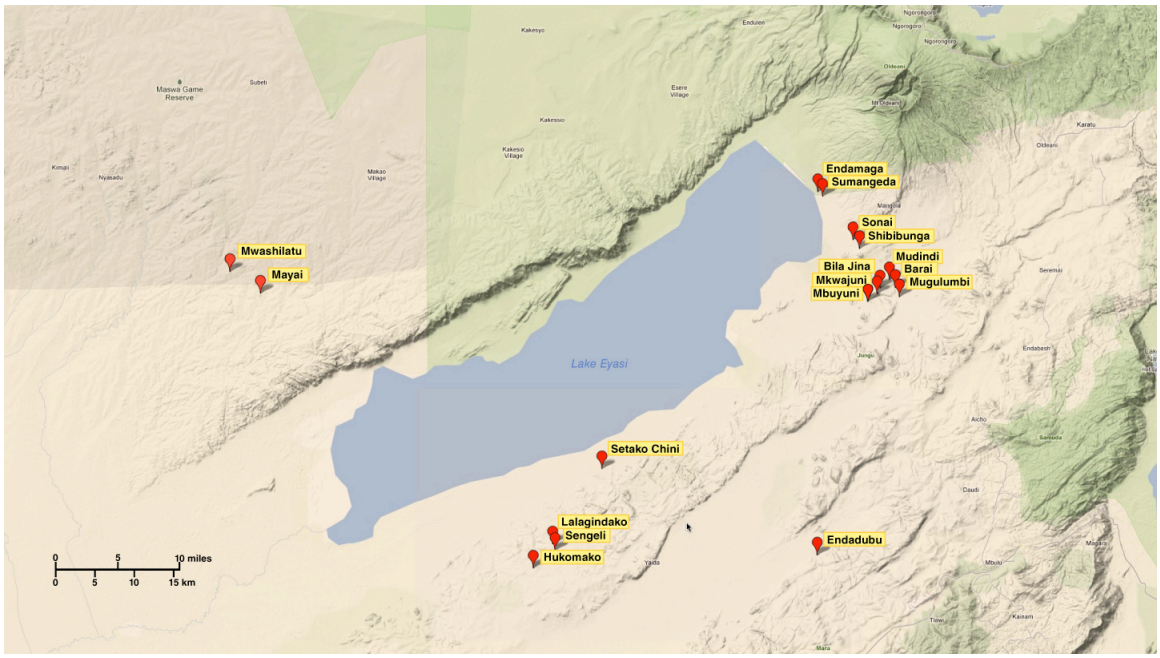
	Coef.	*S.E.*	*p*	*Log Likelihood*	*Null Log Likelihood*
Social Proximity, Gift Network	0.55	0.15	0.00	–3533	–3539
Social Proximity, Campmate network	0.47	0.07	0.00	–27611	–27639
Genetic Proximity (Relatedness)	0.69	0.15	0.00	–56794	–56806
Geographic Proximity	0.0011	0.0003	0.00	–54370	–54379
Same Camp	0.27	0.04	0.00	–56770	–56806
Same Sex	–0.01	0.02	0.39	–56806	–56806
Age Similarity	–0.0010	0.0008	0.27	–56805	–56806

Coefficients from seven separate bivariate interval regression models of the relationship between similarity of contribution in the public goods game and various measures of similarity and proximity (shown in the first column). Similarity is measured as the negative absolute value of the ego and alter values of the variable. Social proximity is the inverse of geodesic distance. Genetic proximity is relatedness (genetic variation in common). Geographic proximity is the negative distance in kilometers. Each model includes a constant term (not shown) and adjusts for multiple observations of the same ego and multiple observations of the same alter using Huber-White sandwich standard errors.

Supplementary Table S51: Multivariate Relationship Between Similarity in Public Good Game Contributions and Various Measures of Proximity and Similarity

	Public Good Giving in Campmate Networks			*Public Good Giving in Gift Networks*		
	Coef.	*S.E.*	*p*	*Coef.*	*S.E.*	*p*
Social Proximity	0.39	0.08	0.00	0.65	0.15	0.00
Genetic Proximity (Relatedness)	0.40	0.21	0.06	1.03	0.38	0.00
Geographic Proximity	–0.0003	0.0004	0.51	---	---	---
Same Camp	0.21	0.06	0.00	---	---	---
Constant	–1.30	0.04	0.00	–1.12	0.10	0.00
Log Likelihood		–26381			–3507	
Null Log Likelihood		–25424			–3518	

Coefficients from a single multivariate interval regression model of the relationship between similarity of contribution in the public goods game and various measures of similarity and proximity (shown in the first column). Similarity is measured as the negative absolute value of the ego and alter values of the variable. Social proximity is the inverse of geodesic distance. Genetic proximity is relatedness (genetic variation in common). Geographic proximity is the negative distance in kilometers. The model includes adjusts for multiple observations of the same ego and multiple observations of the same alter using Huber-White sandwich standard errors. An analysis of variance inflation factors for each model suggests multicollinearity is not a problem for these models (all values are <1.35 for all variables).



Supplementary Figure S1: Map showing the location of 17 different Hadza camps visited around Lake Eyasi in Tanzania.

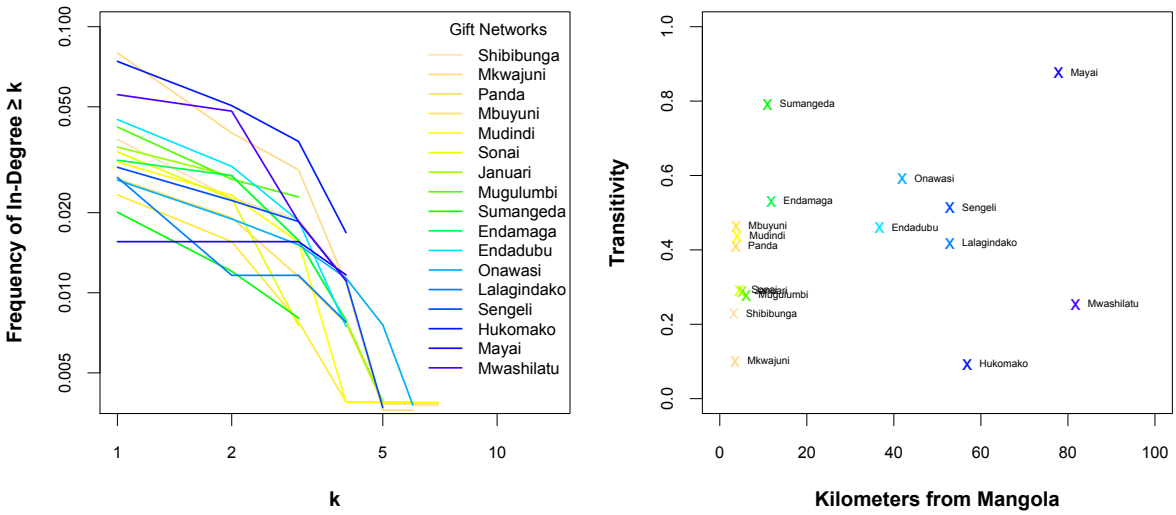
Supplementary Figure S2: Example of one poster set for one sex (women). These posters were used to elicit social ties.

Supplementary Figure S3: Picture of a Hadza woman playing the public goods game.

Nominations Between Camps

	Barai	Bila Jina	Endadubu	Endamaga	Hukomako	Lalagindako	Mayai	Mbuyuni	Mizeu	Mkwajuni	Mudindi	Mugulumbi	Mwashilatu	Sengeli	Setako Chini	Shibibunga	Sonai	Sumangeda
Barai	23			2		1				4	6	7					1	
Bila Jina	2	18	2	1	3			1	1	2	3	1		1		3	2	
Endadubu			39		6	1						1					1	
Endamaga	1			25					1	3	2	4		1		3		
Hukomako			8		36	4	1			5				4	2		1	
Lalagindako				1	5	4			1	3	1	1		4	2		1	
Mayai							5	2					2			1		
Mbuyuni		1				1	1	11		2	1	5		2	1	2	1	1
Mizeu						1			3		1			4	1			1
Mkwajuni	1		5		4	2		3	1	44	1	1		2	3	2		2
Mudindi	3		2			2		2	1	3	25	4		1		5	2	
Mugulumbi	4	1	2					2		5	2	27				3	2	
Mwashilatu			1				3	3		1		1	50	1		1		1
Sengeli			1	1	5	2		1	1	1				13	1	1		
Setako Chini	1				1	3		1	4	4	1	2		4	22		1	
Shibibunga	3	3		1			1	3	1	1	5	3	2	1		30	1	2
Sonai	1	5		2				3		3	2	7			1	3	12	1
Sumangeda	1			1				2		1	1	3		2		4		6

Supplementary Figure S4: Number of social ties from ego (row) to alter (column) by camp. Darker shades indicate more nominations. Approximately 46% of the social ties are between camps.



Supplementary Figure S5. Left panel shows cumulative degree (k) distributions for each camp in the gift networks, ordered by distance from Mangola (the main tourist village) from farthest (yellow) to nearest (blue). Right panel shows relationship between distance from Mangola and network transitivity. The distributions show that the social networks of camps where people have more interactions with markets are not different from others. Pearson correlations between distance and mean camp in-degree, out-degree, and transitivity are all insignificant (p=0.51, p=0.51, and p=0.39, respectively). This is also true for the campmate networks partitioned by camp (p=0.29, p=0.29, and p=0.55, respectively). These results suggest that exposure to markets does not influence human network structure.

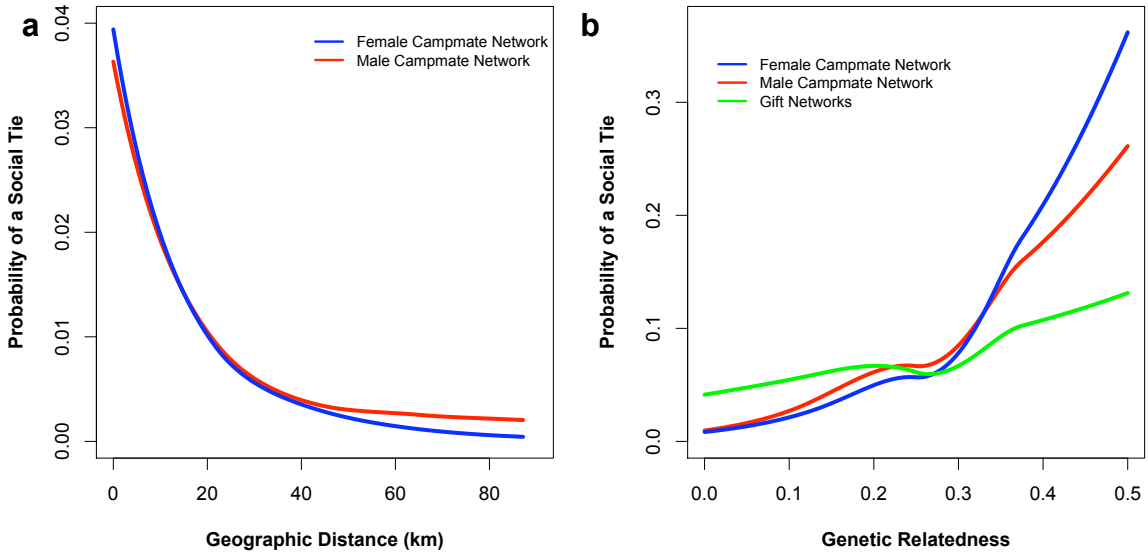


Figure S6. LOESS plots of social ties vs. geographic distance (a) and genetic relatedness (b) show that people are more likely to be connected to close relatives and to people who live nearby. (Gift networks are defined only within camps and so are not presented in (b).)

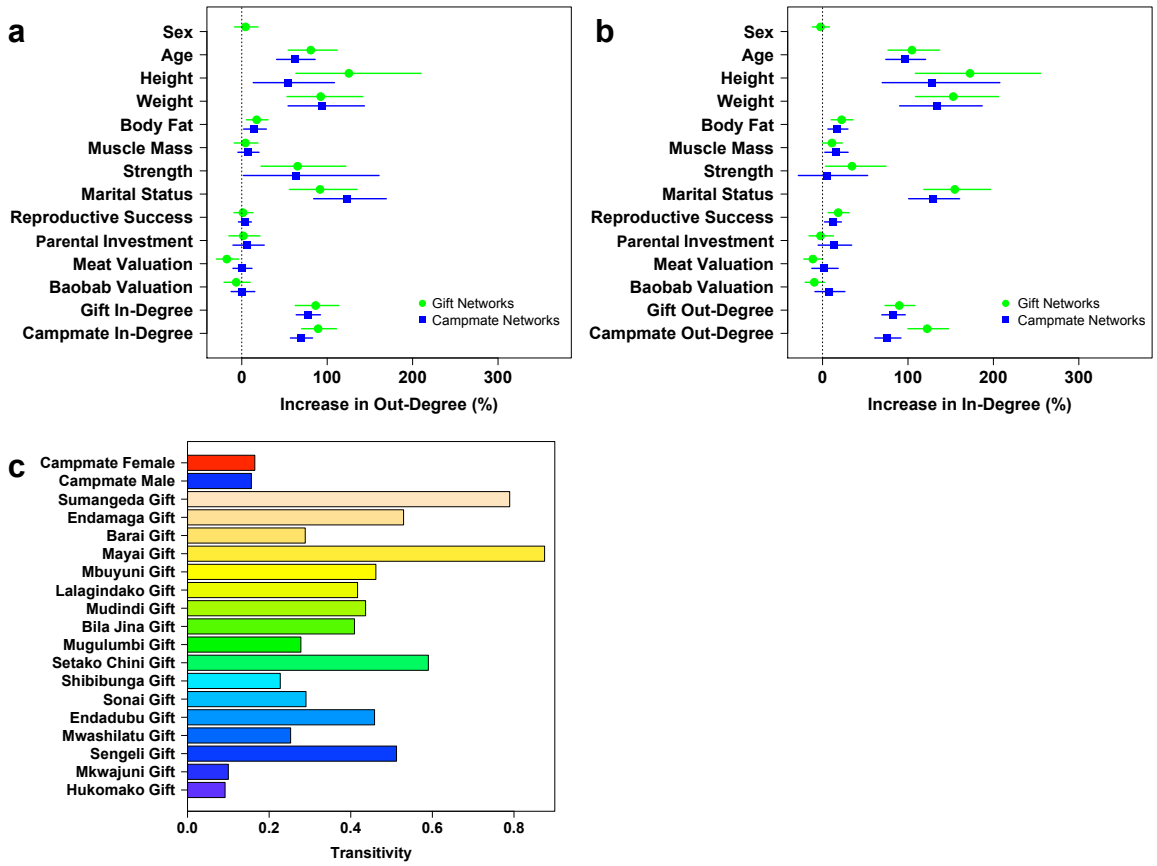
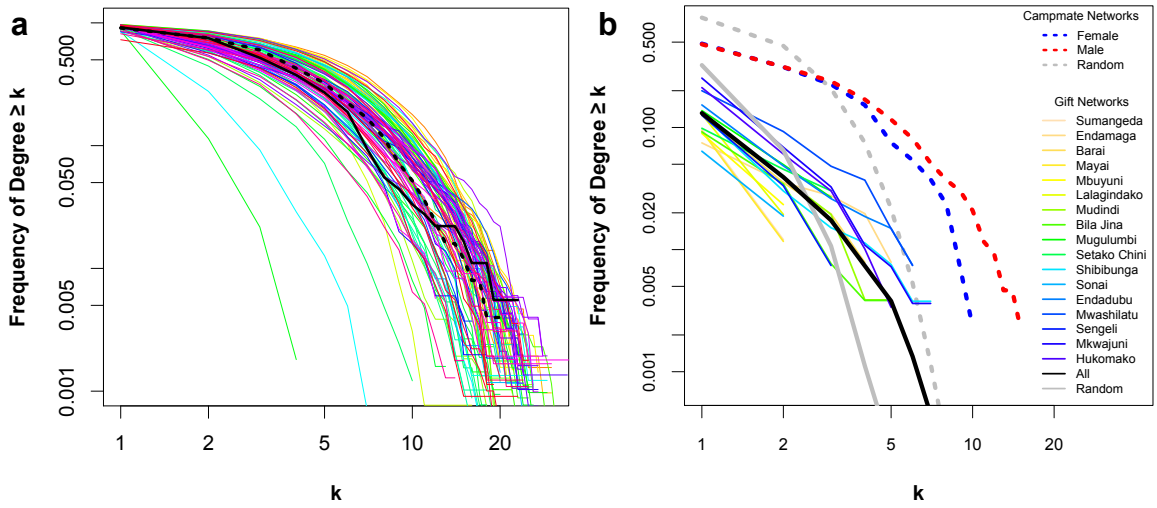
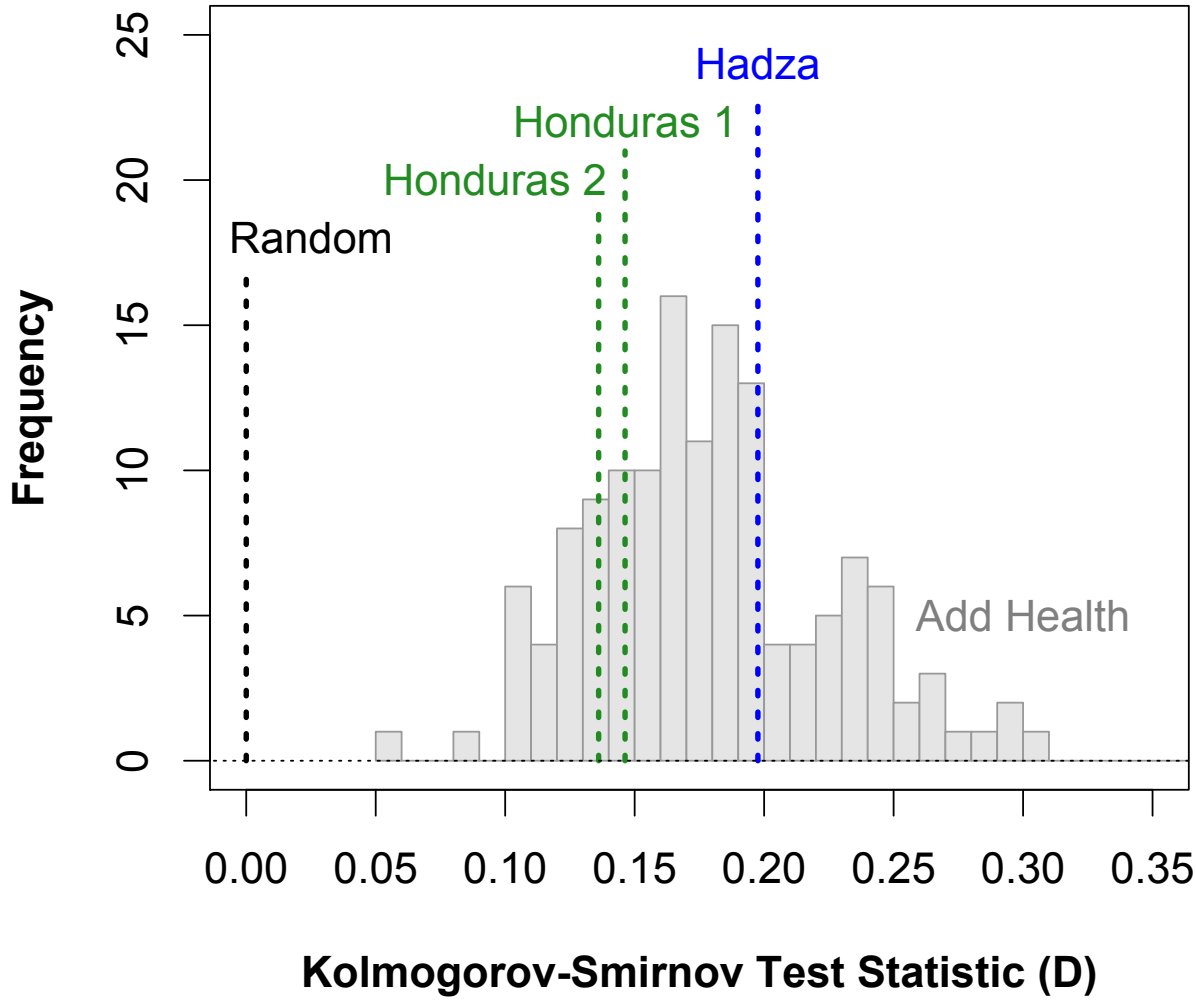


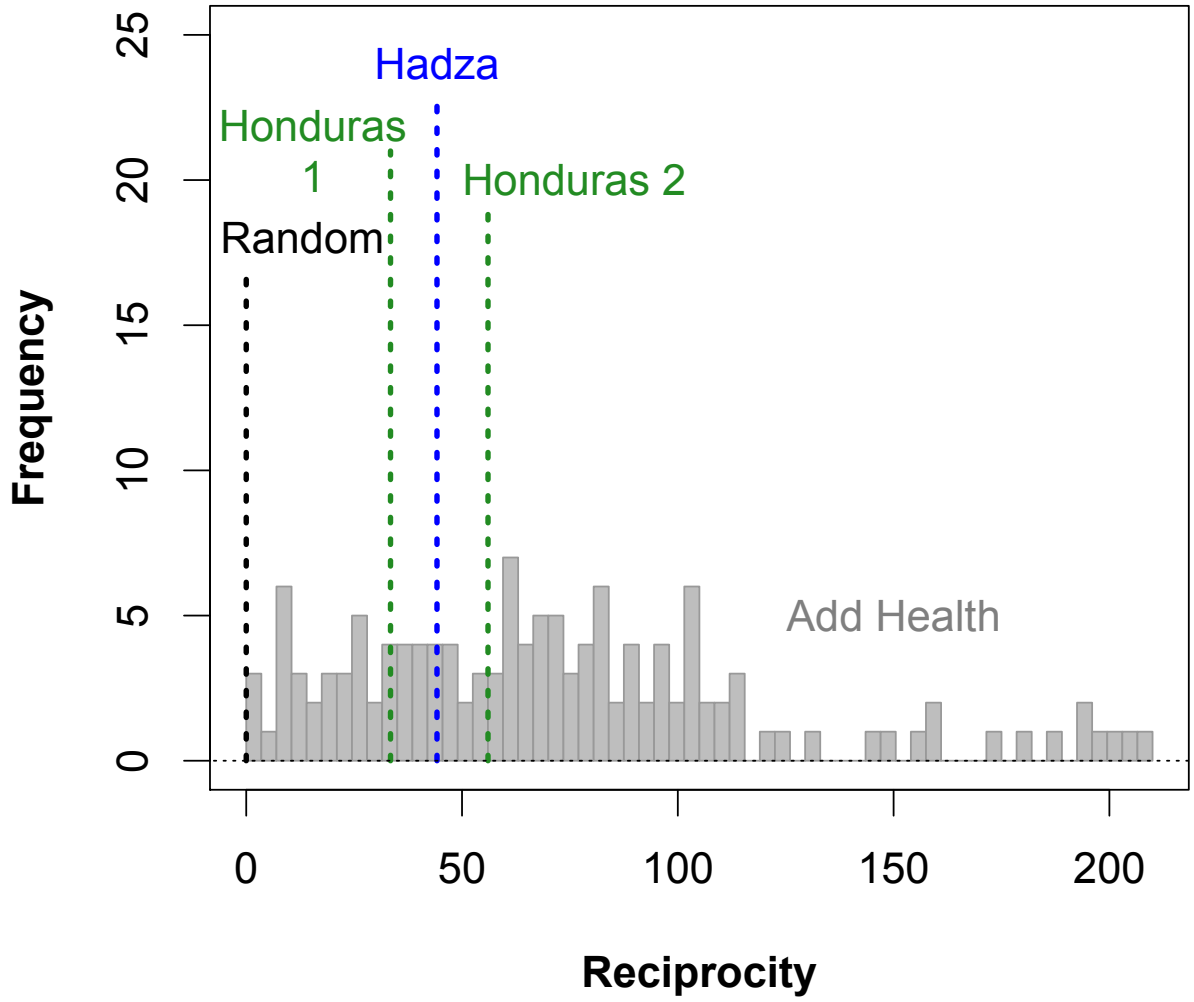
Figure S7. Estimates based on dyadic models of social ties indicate how much a 1SD change in the variables shown are associated with increased out-degree (a) and in-degree (b). Horizontal lines indicate 95% confidence intervals. Several characteristics are significantly related to social network structure, even after including numerous controls (see SI). (c) Measures of transitivity in each network are much higher than would result from similarly-sized random networks, which produce measures of transitivity all less than 0.01. For the campmate networks, sex is not included because all ties are same sex.



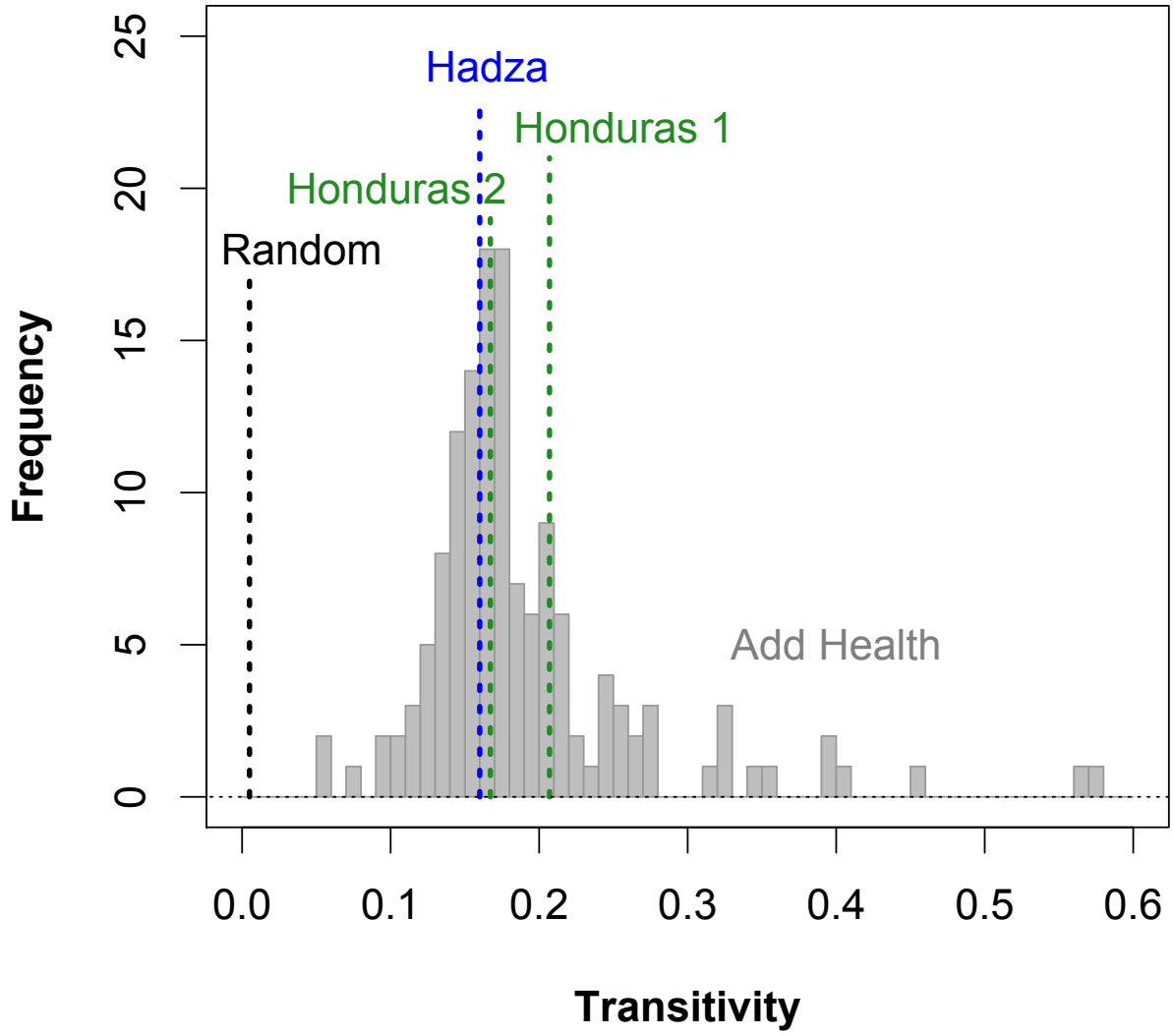
Supplementary Figure S8. (a) Cumulative degree distributions for 142 networks from the Add Health study (each in a unique color) and 2 networks from villages in Honduras (in black, one solid, one dotted). (b) For comparison, we repeat the degree distributions shown in the main text in Figure 1a on the same scale.



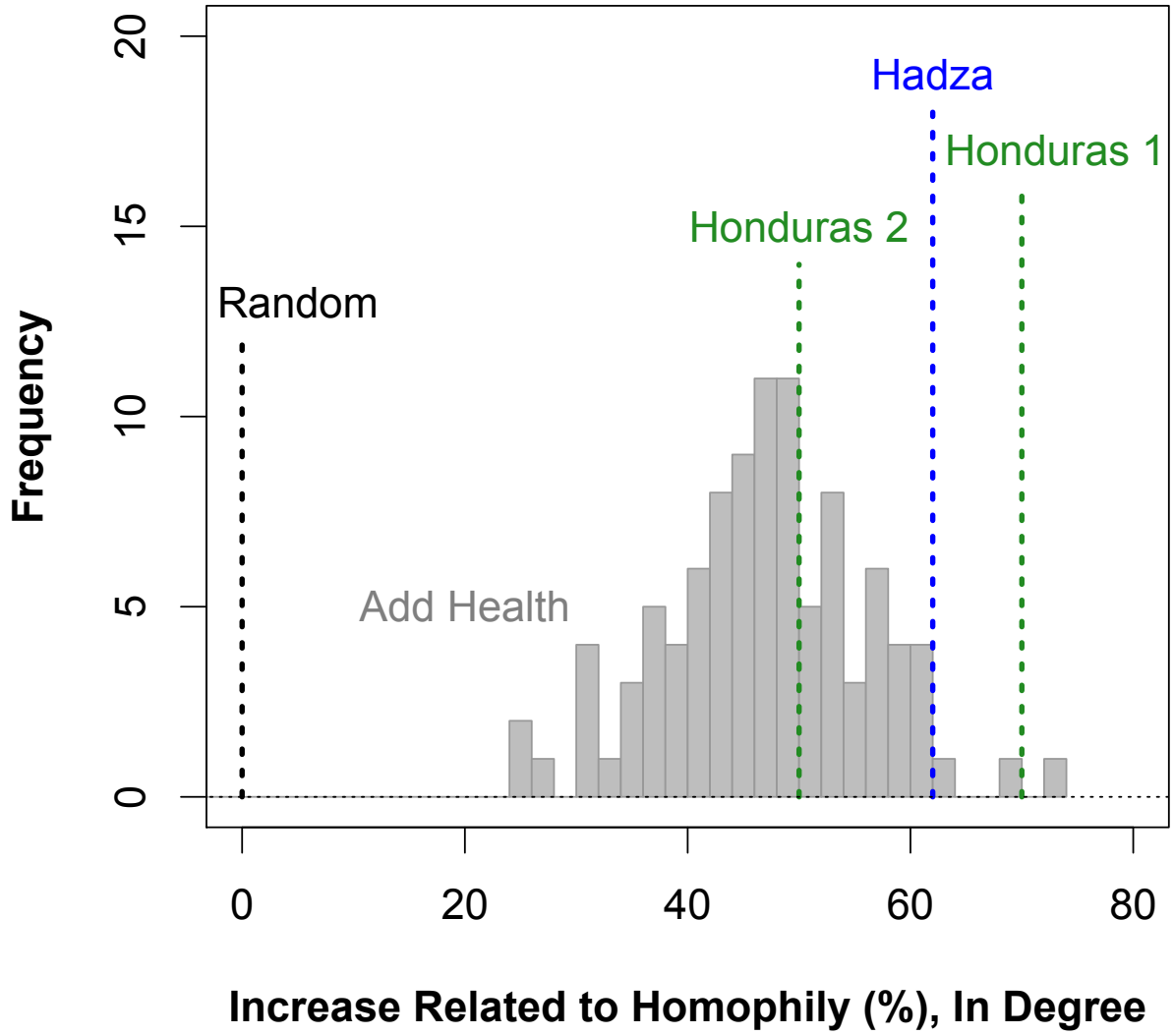
Supplementary Figure S9. Kolmogorov-Smirnov test statistics for each network in the Add Health data, two Honduras village networks, and the Hadza campmate network, showing the maximum difference (*D*) between the observed cumulative degree distribution and the theoretical cumulative degree distribution for a random network with the same number of nodes and ties. All but two of these networks differ significantly ($p<0.05$) from the random network.



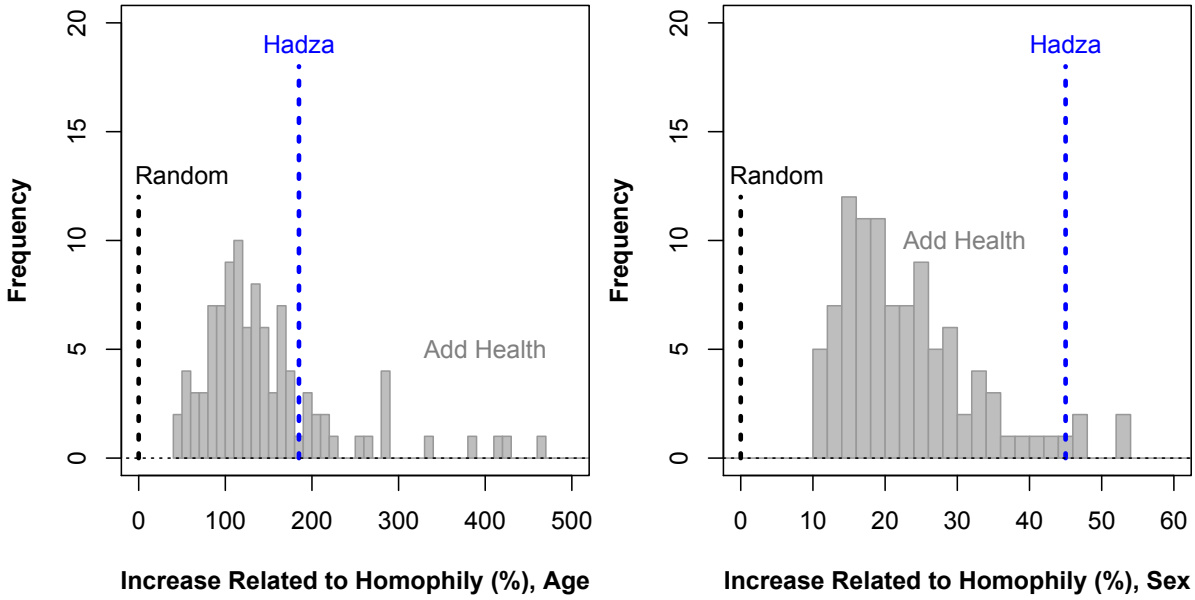
Supplementary Figure S10. Distribution of reciprocity estimates from each network in the Add Health data, two Honduras village networks, and the Hadza campmate network. Estimates are based on dyadic models of social ties and indicate the factor increase in the likelihood of a tie from A to B given there is a tie from B to A. The results show that the networks exhibit strong reciprocity.



Supplementary Figure S11. Measures of transitivity in each network in the Add Health data, two Honduras village networks, and the Hadza campmate network are typically much higher than would result from similarly-sized random networks, which produce measures of transitivity all less than 0.01.



Supplementary Figure S12. Distribution of estimates from each network in the Add Health data, two Honduras village networks, and the Hadza campmate network based on dyadic models of social ties. These models indicate how much a 1SD change in the variables shown are associated with the increased likelihood of a social tie. The results show significant assortativity on degree (highly connected people tend to be friends with other highly connected people).



Supplementary Figure S13. Distribution of estimates from each network in the Add Health data and the Hadza campmate network based on dyadic models of social ties. These models indicate how much a 1SD change in the variables shown are associated with the increased likelihood of a social tie. The results indicate significant homophily on age and sex.

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